Eastern Kern
Air Pollution Control District

Glen E. Stephens, P.E.
Air Pollution Control Officer

March 9, 2018

Ms. Carol Sutkus
Air Resources Board
Stationary Source Division
P.O. Box 2815
Sacramento, CA 95815

SUBJECT: Amended Rule 425, Cogeneration Gas Turbine Engines (Oxides of Nitrogen)

Dear Ms. Sutkus:

Enclosed is the Rule Action Package for Rule 425, Cogeneration Gas Turbine Engines (Oxides of Nitrogen), amended by the Eastern Kern Air Pollution Control District (District) Board of Directors on January 8, 2018. Amended Rule 425 became effective upon Board Adoption. The package is being sent electronically to csutkus@arb.ca.gov. The District requests that the California Air Resources Board (CARB) forward all appropriate documentation to U.S. EPA Region IX office as a revision to the District's SIP.

The District also requests that CARB update their District Rule database of Rules and Regulations located on the CARB website at http://www.arb.ca.gov/drdb/ker/cur.htm to include Amended Rule 425 once it has been approved by EPA.

Included in the Rule Action Package are the following attachments:

1) Complete Clean Copy of the Rule
2) Strikeout Underline Copy of the Rule
3) Certified Governing Board Resolution
4) Certified Notice of Exemption to the Clerk
5) SIP Evaluation and Checklist
6) Evidence of Public Hearing
7) Public Comments and Responses (included in Final Staff Report)
8) Other Materials (Final Staff Report, Certified Board Summary, and Copy of Referenced Rules)

Draft Rule 210.1A, Major New and Modified Stationary Source Review (MNSR) was also adopted at this meeting and being submitted is a separate package. Should you have any questions, please contact Jeremiah Cravens Senior AQS Cravensj@kerncounty.com or (661) 862-5250.

Sincerely,

Glen E. Stephens, P.E.
Air Pollution Control Officer

GES:JC

CALIFORNIA AIR RESOURCES BOARD

SIP COMPLETENESS CHECKLIST
(Electronic Format)

***** TO BE COMPLETED BY DISTRICT AND RETURNED TO ARB *****

All rules submitted to the EPA as State Implementation Plan (SIP) revisions must be supported by certain information and documentation for the rule packages to be deemed complete for review by the EPA. Rules will not be evaluated for approvability by the EPA unless the submittal packages are complete. To assist you in determining that all necessary materials are included in rules packages sent to the ARB for submittal to the EPA, please fill out the following form and include it with the rule package you send ARB. See the ARB's Guidelines on the Implementation of the 40 CFR 51, Appendix V, for a more detailed explanation than is provided here. Adopted rules and rule amendments should be checked against U.S. EPA's Guidance Document for Correcting Common VOC & Other Rule Deficiencies (Little Blue Book, August 21, 2001) to ensure that they contain no elements which will result in disapproval by EPA.

District: Eastern Kern Air Pollution Control District

Rule No: 425

Rule Title: Stationary Gas Turbines (Oxcides of Nitrogen)

Date Adopted or Amended: Amended January 8, 2018

ADMINISTRATIVE MATERIALS

Note: All documents should be in electronic format. Items that have signatures, initials, or stamps may be scanned.

Attached	Not Attached	N/A	
☒	☐	☐	**COMPLETE COPY OF THE RULE:** Provide an unmarked copy of the entire rule as adopted or amended by your District Board.
☒	☐	☐	**UNDERLINE AND STRIKEOUT COPY OF THE RULE**: If an amended rule, provide a complete copy of the rule indicating in underline and strikeout format all language which has been added, deleted, or changed since the rule was last adopted or amended.
☒	☐	☐	**COMPLETE COPY OF THE REFERENCED RULE(S):** For any rule which includes language specifically referencing another rule, a copy of that other rule must also be submitted, unless it has already been submitted to EPA as part of a previous SIP submittal.
☒	☐	☐	**PUBLIC NOTICE EVIDENCE:** Include a copy of the local newspaper clipping certification(s), stating the date of publication, which must be at least 30 days before the hearing. As an alternative, include a copy of the actual published notice of the public hearing as it appeared in the local newspaper(s). In this case, however, enough of the newspaper page must be included to show the date of publication. The notice must specifically identify by title and number each rule adopted or amended.
☒	☐	☐	**RESOLUTION/MINUTE ORDER:** Provide the Board Clerk certified resolution or minute order. This document must include certification that the hearing was held in accordance with the information in the public notice. It must also list the rules that were adopted or amended, the date of the public hearing, and a statement of compliance with California Health and Safety Code Sections 40725-40728 (Administrative Procedures Act).
☒	☐	☐	**PUBLIC COMMENTS AND RESPONSES:** Submit copies of written public comments made during the notice period and at the public hearing. Also submit any written responses prepared by the District staff or presented to the District Board at the public hearing. A summary of the public comments and responses is adequate. If there were no comments made during the notice period or at the hearing, please indicate N/A to the left.

CALIFORNIA AIR RESOURCES BOARD

SIP COMPLETENESS CHECKLIST
(Electronic Format)

TECHNICAL MATERIALS

Attached	Not Attached	N/A	
☒	☐	☐	**RULE EVALUATION FORM:** See instructions for completing the Rule Evaluation Form and the accompanying sample form.
☐	☐	☒	**NON-EPA TEST METHODS:** Attach all test methods that are referenced in your rule that do not appear in 40 CFR 51, 60, 61, 63, or have not been previously submitted to EPA. EPA methods used in other media such as SW846 for solid waste are not automatically approved for air pollution applications. Submittal of test methods that are not EPA-approved should include the information and follow the procedure described in Region 9's "Test Method Review & Evaluation Process."
☐	☐	☒	**MODELING SUPPORT:** Provide if appropriate. In general, modeling support is not required for VOC and NOx rules to determine their impacts on ozone levels. Modeling is required where a rule is a relaxation that affects large sources (≥ 100 TPY) in an attainment area for SO2, directly emitted PM10, CO, or NOx (for NO2 purposes). In cases where EPA is concerned with the impact on air quality of rule revisions which relax limits or cause a shift in emission patterns in a nonattainment area, a reference back to the approved SIP will be sufficient provided the approved SIP accounts for the relaxation and provided the approved SIP used the current EPA modeling guidelines. If current EPA modeling guidelines were not used, then new modeling may be required.
☐	☐	☒	**ECONOMIC AND TECHNICAL JUSTIFICATION FOR DEVIATIONS FROM EPA POLICIES**: The District staff report or other information included with the submittal should discuss all potential relaxations or deviations from RACT, RACM, BACT, BACM, enforceability, attainment, RFP, or other relevant EPA requirements. This includes, for example, demonstrating that exemptions or emission limits less stringent than the presumptive RACT (e.g., a CTG) meet EPA's 5 percent policy, and demonstrating that all source categories exempted from a RACM/BACM rule are de minimus according to EPA's RACM/BACM policy.
☒	☐	☐	**ADDITIONAL MATERIALS**: Provide District staff reports and any other supporting information concerning development of the rule or rule changes. This information should explain the basis for all limits and thresholds contained in the rule.

CALIFORNIA AIR RESOURCES BOARD

APCD/AQMD RULE EVALUATION FORM -- Page 1

(Electronic Format)

I. GENERAL INFORMATION

District: Eastern Kern Air Pollution Control District

Rule No(s): 425 Date adopted/Amended/Rescinded: Amended January 8, 2018

Rule Title(s): Stationary Gas Turbines (Oxides of Nitrogen)

Date Submitted to ARB: March 9, 2018

If an Amended Rule, Date Last Amended (or Adopted): Adopted August 16, 1993

Is the Rule Intended to be Sent to the U.S. EPA as a SIP Revision? ☒ Yes ☐ No *(If No, do not complete remainder of form)*

District Contact: Jeremiah Cravens Phone Number: (661) 862-5250 E-mail Address: Cravensj@kerncounty.com

Narrative Summary of New Rule or Rule Changes: ☐ New Rule ☒ Amended Rule

Amended Rule 425 lowers the current NOx limits for stationary gas turbines with rated heat input of 10.0 megawatts (MW) or more and fired with gaseous or liquid fuels. The rule also has NOx limits for units rated from 0.88 MW to 10.0 MW. A majority of Rule 425 amendments are modeled after California Air Resources Board (CARB) Determination of Reasonably Available Control Technology (RACT) and Best Available Retrofit Control Technology (BARCT) for the Control of Oxides of Nitrogen from Stationary Gas Turbines. Similar rules can be found in Placer County and Yolo Solano Air Quality Management Districts..

Pollutant(s) Regulated by the Rule (Check): ☐ ROG ☒ (NOx) ☐ SO2 ☐ Other:_____
☐ (CO) ☐ PM ☐ TAC (name):_____

II. EFFECT ON EMISSIONS

Complete this section ONLY for rules that, when implemented, will result in quantifiable changes in emissions. Attach reference(s) for emission factor(s) and other information. Attach calculation sheet showing how the emission information provided below was determined.

Net Effect on Emissions: ☐ Increase ☐ Decrease ☒ N/A

Emission Reduction Commitment in SIP for this Source Category: _____

Inventory Year Used to Calculate Changes in Emissions: _____ Area Affected: _____

Future Year Control Profile Estimate *(Provide information on as many years as possible)*:

_____

Baseline Inventory in the SIP for the Control Measure: _____

Emissions Reduction Commitment in the SIP for the Control Measure: _____

Revised Baseline Inventory (if any): _____

Revised Emission Reduction Estimate (if developed): _____

Note that the district's input to the Rule Evaluation Form will not be used as input to the ARB's emission forecasting and planning.

III. SOURCES/ATTAINMENT STATUS

District is: ☐ Attainment ☐ Nonattainment ☒ Split

Approximate Total Number of Small (<100 TPY) Sources Affected by this Amendment: 0

Percent in Nonattainment Area: 100%

Number of Large (≥ 100 TPY) Sources Controlled: 1 Percent in Nonattainment Area: 100%

Name(s) and Location(s) (city and county) of Large (≥ 100 TPY) Sources Controlled by Rule *(Attach additional sheets as necessary)*: Eastern Kern County - US Borax

IV. EMISSION REDUCTION TECHNOLOGY

Does the Rule Include Emission Limits that are Continuous? ☒ Yes ☐ No

If Yes, Those Limits are in Section(s) V (Requirements) of the Rule.

Other Methods in the Rule for Achieving Emission Reductions are: N/A

V. OTHER REQUIREMENTS

The Rule Contains:

Emission Limits in Section(s): V Work Practice Standards in Section(s): V and VIII
Recordkeeping Requirements in Section(s): VI Reporting Requirements in Section(s): VI

APCD/AQMD RULE EVALUATION FORM -- Page 3
(Electronic Format)

VI. IMPACT ON AIR QUALITY PLAN

☐ No Impact ☐ Impacts RFP ☒ Impacts attainment

Discussion: The amended rule is expected to result in NOx emission reductions and help the District achieve further progress toward attainment of ozone standards.

BEFORE THE AIR POLLUTION CONTROL BOARD
EASTERN KERN AIR POLLUTION CONTROL DISTRICT

In the matter of: ADOPTION OF AMENDED RULE 425, STATIONARY GAS TURBINES (OXIDES OF NITROGEN) OF THE EASTERN KERN AIR POLLUTION CONTROL DISTRICT	)	Resolution No. 2018-005-01

I, Louise Roman, SECRETARY TO THE AIR POLLUTION CONTROL BOARD OF THE EASTERN KERN AIR POLLUTION CONTROL DISTRICT, certify that the following Resolution, proposed by Director Scrivner and seconded by Director Parris, was duly passed and adopted by said Board at an official meeting on this 11th day of January, 2018, by the following vote:

AYES: Scrivner, Parris, Grimes, Gleason

NOES: None

ABSENT: Thomas

(District Seal)

EASTERN KERN AIR POLLUTION DISTRICT BOARD OF DIRECTORS

Louise Roman
Secretary of the Air Pollution Control Board of the Eastern Kern Air Pollution Control District

By Louise Roman

RESOLUTION

Section 1. RECITALS:

(a) The Eastern Kern Air Pollution Control District (District) is authorized by Health and Safety Code section 40702 to make and enforce all necessary and proper orders, rules and regulations to accomplish the purposes of Division 26 of the Health and Safety Code; and

(b) The Air Pollution Control Officer ("APCO") for said District has recommended that the Board of Directors of the Eastern Kern Air Pollution Control District ("Board") consider adopting certain revisions to the Rules and Regulations of the District; and

(c) A notice of a public hearing on January 11, 2018, at the hour of 2:00 p.m. at the Tehachapi Police Department Communications Room 220 West "C" Street, Tehachapi, California, to consider adoption of amended Rule 425, Stationary Gas Turbines (Oxides of Nitrogen), was duly given;

(d) The matter was heard at the time and place so specified, evidence was received and all persons desiring to be heard in said matter were given an opportunity to be heard;

Section 2. IT IS RESOLVED by the Board as follows:

1. This Board does hereby revise the Rules and Regulations of the District as set forth in Exhibit "A" attached hereto and incorporated herein by this reference. The foregoing referenced Rules and Regulations attached hereto as Exhibit "A" are hereby adopted as revisions to the Rules and Regulations of the District with said amendments to be effective January 11, 2018.

2. The findings of this Board, based on the evidence submitted at the hearing upon which its decision is based, are as follows:

a. The proposed revisions to the Rules and Regulations will adopt amended Rule 425 to lower current NOx limits for stationary gas turbines with rated heat input of 10.0 megawatts (MW) or greater fired with gaseous or liquid fuels, and include NOx limits for units rated from 0.88 MW to 10.0 MW; and

b. All notices required to be given by law have been duly given in accordance with Health and Safety Code section 40725, and the Board has allowed public comment, both oral and written, in accordance with Health and Safety Code section 40726; and

c. The written analysis required by Health and Safety Code section 40727.2, which identifies all existing federal air pollution control requirements that apply to the same equipment or source type as the rule proposed for adoption or modification, and also identifies any of the District's existing or proposed rules that apply to the same equipment or source type, was prepared by the District. A copy of the analysis was made available to the public from the District.

3. Further findings of this Board as required by Health and Safety Code Section 40727 are as follows:

a. The proposed revisions are necessary to accomplish the purposes of Division 26 of the Health and Safety Code and to comply with state and/or federal Clean Air Act requirements; and

b. The Board is authorized to adopt and revise rules and regulations as may be necessary or proper to execute the powers and duties granted to, and imposed upon, the District by Health and Safety Code section 40702; and

c. The Board has reviewed the proposed revisions and has determined that the said provisions are set forth in clear and concise language so that their meaning can be easily understood by the persons directly affected by them; and

d. The proposed revisions are in harmony with, and not in conflict with or contradictory to, existing District Rules and Regulations, statutes, court decisions, or state or federal regulations; and

e. The revised Rules and Regulations are being implemented in compliance with Health and Safety Code section 40001 which requires the District to adopt and enforce rules and regulations to achieve and maintain the state and federal ambient air quality standards in all areas affected by emissions sources under its jurisdiction, and enforce all applicable provisions of state and federal law.

4. This Board finds, based on the staff report filed with this Board and the record of its rule adoption hearing, and pursuant to sections 40703 and 40922 of the Health and Safety Code, that the Rules and Regulations contained in Exhibit "A" are the most cost effective of the available control measures considered by this Board.

5. This Board finds that Amended Rule 425, Stationary Gas Turbines (Oxides of Nitrogen), poses no significant impact on the environment and is exempt from California Environmental Quality Act (CEQA) Guidelines pursuant to the Section 15061, Subsections (2) & (3).

6. District staff is directed to prepare a Notice of Exemption for this project, and the Secretary of this Board is hereby directed to file the Notice of Exemption with the Kern County Clerk.

7. The District shall maintain a record of this rule-making proceeding in accordance with Health and Safety Code section 40728.

8. The Secretary of this Board is hereby directed, for the purposes of conforming to Section 40704 of the Health and Safety Code, to cause a certified copy of this Resolution, together with the Rules and Regulations adopted herein, to be filed with the California Air Resources Board.

9. The Secretary of this Board is further directed to cause a certified copy of this Resolution to be forwarded to the APCO for said District and to the County Counsel of Kern County.

10. The APCO for said District is directed to transmit said rule to the California Air Resources Board for submittal to EPA for incorporation in the District's State Implementation Plan (SIP).

11. The Board authorizes the APCO for said District to include in the submittal or subsequent documentation any technical corrections, clarifications, or additions that may be needed to secure EPA approval, provided such changes do not alter the substantive requirements of the approved rule.

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RULE 425 **Stationary Gas Turbines (Oxides of Nitrogen)** - Adopted 8/16/93, Amended 1/11/18

I. Purpose

The purpose of this Rule is to limit oxides of nitrogen (NOx) emissions from stationary gas turbines.

II. Applicability

The provisions of this Rule shall apply to any stationary gas turbine with a rating equal to or greater than 0.88 megawatts (MW) operating in the Eastern Kern Air Pollution Control District (District).

III. Definitions

A. Combined Cycle: Any stationary gas turbine operated both for the production of electrical energy from shaft work and the useful energy produced from heat recovered from its exhaust gases.

B. Dry Low-NOx Combustor: Any gas turbine engine combustor using staging, air/fuel premixing or other design features to reduce NOx emissions.

C. Gaseous Fuel: Any fuel existing as gas at standard conditions.

D. Liquid Fuel: Any fuel, including distillate and residual oil, existing as liquid at standard conditions.

E. Oxides of Nitrogen (NOx): Total nitrogen oxides (expressed as NO_2).

F. Power Augmentation: An increase in the gas turbine shaft output and/or the decrease in gas turbine fuel consumption by the addition of energy recovered from exhaust heat.

G. Rating: Manufacturer's continuous electrical output megawatt (MW) specification for a gas turbine system.

H. Simple Cycle: Any stationary gas turbine in which all electric generators are driven by shaft work from fuel combustion.

I. Selective Catalytic Reduction (SCR): A post-combustion control technology that utilizes a reducing agent, such as ammonia, injected into the exhaust gas stream where it converts NOx to molecular nitrogen in the presence of a catalyst.

J. Stationary Gas Turbine: Any gas turbine system, with or without power augmentation, which is permanently attached to a foundation, or is not a portable gas turbine. The gas turbine is not self-propelled nor intended to be propelled while performing its function, although it may be mounted onto a foundation. Two or more gas turbines powering a common shaft shall be treated as one gas turbine.

K. Standard Conditions: As defined in Rule 102, Subsection RR.

L. Shut-Down Period: The time necessary to cease operation of a gas turbine from operating under load conditions. The time shall not exceed one (1) hour.

M. Start-Up Period: The time necessary to bring operation of a gas turbine up to the designed rating. The time shall not exceed six (6) hours for combined cycle gas turbine power plants or two (2) hours for simple cycle gas turbine power plants.

IV. Exemptions

The provision of this Rule shall not apply to the operation of stationary gas turbines under the following conditions:

A. Emergency standby units demonstrated to operate less than 200 hours per year.
B. Units less than 4 MW that operate less than 877 hours per year.
C. Laboratory units used in research and testing for the advancement of gas turbine technology.
D. Units operated exclusively for firefighting and/or flood control.
E. Turbines used in test cells and test stands.
F. Portable equipment registered in accordance with ARB regulations under 13 CCR 2450-2465, Portable Equipment Registration Program (PERP) or 13 CCR 2420 Off-road Compression-ignition Engines and Equipment. Portable turbines used by the Department of Defense or National Guard exclusively used for military tactical support or other federal emergency purposes.

V. Requirements

A. Emission Limits

The owner or operator of any stationary gas turbine unit shall not operate such unit under load conditions, excluding the start-up or shut-down period which results in the measured NOx emissions concentration exceeding the compliance limit listed below, averaged over one (1) hour based on four consecutive 15-minute averages:

Unit Size Megawatt Rating (MW)	**Compliance Limit NOx, ppmv at 15% O_2**	
	Gaseous Fuel	**Liquid Fuel**
Units Rated 0.88 to Less Than 2.9 MW OR Units Greater Than or Equal to 4 MW That Operate Less Than 877 Hour/Year	42	65
2.9 MW to Less Than 10 MW	25	65
10.0 MW and Greater	9	25

B. The owner or operator of Westinghouse W251B10 with Authority to Construct issued before January 1, 1983 using dry low-NOx combustors shall have the following NOx emission limits:

1. 25 ppmv at 15% O_2 when fired with gaseous fuel or,

2. 65 ppmv at 15% O_2 when fired with liquid fuel.

C. Start-up/Shut-down Combined Cycle Units

The NOx emissions shall meet at least one of the following averaged over the duration of the start-up or shut-down period:

1. 70 ppmv at 15% O_2 for turbines fired with gaseous fuel or,

2. 226 ppmv at 15% O_2 for turbines fired with liquid fuel.

D. Start-up/Shut-down Simple Cycle Units

The NOx emission shall be kept to a minimum by use of the following:

1. Manufacturer’s recommendation for operation during start-up and shut-down.

2. Injection of water as soon as reasonably possible.

3. Maintaining proper air to fuel ratios.

VI. Administrative Requirements

A. Emission Control Plan

The owner or operator of any existing stationary gas turbine subject to this Rule shall submit to the APCO for approval an emissions control plan, including a schedule of increments of progress to be taken to meet or exceed requirements of Section V to comply with the compliance schedule prescribed by Section VIII.

An emissions control plan shall be submitted for each stationary gas turbine subject to this Rule, including:

1. District permit number,
2. Gas turbine manufacturer's name and model number,
3. Rated electrical energy output (MW) and rated heat recovery (Btu/hr),
4. Type of fuel (gas and/or liquid),
5. Last year's fuel consumption (cubic feet of gas or gallons of liquid),
6. Last year's hours of operation,
7. Type of emissions control to be applied to engine, and
8. Documentation showing current NOx emissions concentration.

B. Monitoring and Recordkeeping

The owner or operator of any stationary gas turbine subject to the provisions of this rule shall perform the following actions:

1. Install, operate, and maintain in calibration equipment capable of continuously measuring and recording the following:

    a. Control system operating parameters:

        i. Periodic NOx emission concentrations,
        ii. Turbine exhaust oxygen concentration,
        iii. Air-to-fuel ratio,
        iv. Flow rate of reducing agents added to turbine exhaust,
        v. Catalyst inlet and exhaust temperature,
        vi. Catalyst inlet and exhaust oxygen concentration,
        vii. Other operational characteristics.

    b. Elapsed time of operation measured by an hourly meter.

2. For units with 10 MW or greater, the owner or operator shall monitor the exhaust gas NOx concentrations. The NOx monitoring system shall meet EPA requirements as specified in 40 CFR Part 60, Appendix B, Specification 2, or other systems approved by EPA. The owner or operator shall submit to the Air Pollution Control Officer the information demonstrating that emission monitoring system has data gathering and retrieval capability.

3. Submit to the Air Pollution Control Officer, prior to issuance of Permit to Operate, information correlating the control system operating parameters to the associated NOx output. This information may be used by the Air Pollution Control Officer to determine compliance when there is no continuous emission monitoring system for NOx available or when the continuous emission monitoring system is not operating properly.

4. Provide source test information regarding the exhaust gas NOx concentration at ISO conditions corrected to 15 percent oxygen on a dry basis.

5. Maintain a stationary gas turbine engine operating log, including, on a daily basis, actual start-up and stop times, total hours of operation, and type and quantity of fuel used (liquid/gas).

6. Maintain and make all records available for District inspection at any time for a period of five (5) years.

C. Compliance Testing

The owner or operator of any stationary gas turbine subject to provisions of this rule shall conduct annual testing using the methods specified in Section VI.D below.

D. Test Methods

1. Oxides of nitrogen (NOx) emissions shall be determined using EPA Method 7E or EPA Method 20 or ARB Method 100.

2. Exhaust gas Oxygen (O_2) concentration content shall be determined using EPA Method 3A or ARB Method 100.

E. Exempt Units

Exempt units shall comply with the following:

1. The owner or operator of any unit exempt under Section IV shall submit support documentation to the Air Pollution Control Officer within seven days if the hour-per-year limit is exceeded. If the hour-per-year limit is exceeded, the exemption shall be permanently withdrawn. Within 30 days after the exceedance, the owner or operator shall submit an application for Authority to Construct that details a plan to meet the applicable limits specified in Section V of this Rule. Included in the application, the owner or operator shall submit a schedule of increments of progress for the installation of the required control equipment. This schedule shall not exceed four years from the date of the receipt of Authority to Construct application.

2. A public service unit operating during a state of emergency, when such emergency is declared by proclamation of the Governor of the State of California and when the unit is located in the specific geographical location identified in the proclamation, shall be excluded from the hour-per-year limit.

VII. Calculations

NOx emissions concentrations shall be calculated using the following equation:

$$NOx = (NOx_{obs})\ (P_{ref}/P_{obs})^{0.5}\ (288\ K/T_{amb})^{1.53}(e^{19(Hobs-0.00633)})$$

where:

NOx	=	NOx emissions concentration (ppmv) corrected to 15 percent oxygen and ISO standard conditions on a dry basis.
NOx_{obs}	=	Measured stack gas NOx emissions concentration (ppmv) corrected to 15 percent oxygen on a dry basis.
P_{ref}	=	standard atmospheric pressure (14.7 psia).
P_{obs}	=	atmospheric pressure measured at site during testing, psia.
H_{obs}	=	absolute ambient humidity measured at site during testing, pounds water per pound dry air.
e	=	transcendental constant (2.718).
T_{amb}	=	ambient air temperature in K and measured at site during testing.

VIII. Compliance Schedule

An owner or operator of a stationary gas turbine subject to Section V and not currently achieving such limits shall comply with requirements of Section V in accordance with the following schedule:

A. By (18 months after rule adoption date), submit to the Control Officer a compliance plan, and a complete application for Authority to Construct for all necessary equipment modifications subject to Rule 201.

B. By January 1, 2021, demonstrate full compliance.

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PROOF OF PUBLICATION

The BAKERSFIELD CALIFORNIAN
P.O. BOX 440
BAKERSFIELD, CA 93302

EASTERN KERN AIR POLLUTION
CONTROL DISTRICT
2700 M ST 302
BAKERSFIELD. CA 93301

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Ad Number:	14422079	**PO #:**	
Edition:	1TBC	**Run Times**	1
Class Code	Legal Notices		
Start Date	12/8/2017	**Stop Date**	12/8/2017
Billing Lines	56	**Inches**	336.92
Total Cost	$ 97.70	**Account**	1KCA15
Billing Address	EASTERN KERN AIR POLLUTION C 2700 M ST 302 BAKERSFIELD,CA 93301		

STATE OF CALIFORNIA
COUNTY OF KERN

I AM A CITIZEN OF THE UNITED STATES AND A RESIDENT OF THE COUNTY AFORESAID: I AM OVER THE AGE OF EIGHTEEN YEARS, AND NOT A PARTY TO OR INTERESTED IN THE ABOVE ENTITLED MATTER. I AM THE ASSISTANT PRINCIPAL CLERK OF THE PRINTER OF THE BAKERSFIELD CALIFORNIAN, A NEWSPAPER OF GENERAL CIRCULATION. PRINTED AND PUBLISHED DAILY IN THE CITY OF BAKERSFIELD COUNTY OF KERN,

AND WHICH NEWSPAPER HAS BEEN ADJUDGED A NEWSPAPER OF GENERAL CIRCULATION BY THE SUPERIOR COURT OF THE COUNTY OF KERN, STATE OF CALIFORNIA, UNDER DATE OF FEBRUARY 5, 1952, CASE NUMBER 57610; THAT THE NOTICE, OF WHICH THE ANNEXED IS A PRINTED COPY, HAS BEEN PUBLISHED IN EACH REGULAR AND ENTIRE ISSUE OF SAID NEWSPAPER
AND NOT IN ANY SUPPLEMENT THEREOF ON THE FOLLOWING DATES, TO WIT: 12/8/17

ALL IN YEAR 2017

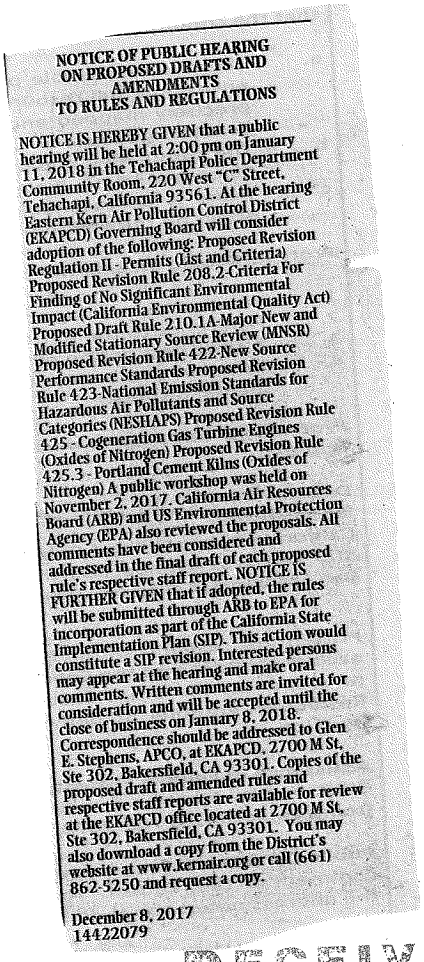
I CERTIFY (OR DECLARE) UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND CORRECT.

DATED AT BAKERSFIELD CALIFORNIA
12/9/17

Solicitor I.D.: 0

First Text
NOTICE OF PUBLIC HEARINGON PROPOSED DRA

Ad Number 14422079



NOTICE OF PUBLIC HEARING
ON PROPOSED DRAFTS AND
AMENDMENTS
TO RULES AND REGULATIONS

NOTICE IS HEREBY GIVEN that a public hearing will be held at 2:00 pm on January 11, 2018 in the Tehachapi Police Department Community Room, 220 West "C" Street, Tehachapi, California 93561. At the hearing Eastern Kern Air Pollution Control District (EKAPCD) Governing Board will consider adoption of the following: Proposed Revision Regulation II - Permits (List and Criteria) Proposed Revision Rule 208.2-Criteria For Finding of No Significant Environmental Impact (California Environmental Quality Act) Proposed Draft Rule 210.1A-Major New and Modified Stationary Source Review (MNSR) Proposed Revision Rule 422-New Source Performance Standards Proposed Revision Rule 423-National Emission Standards for Hazardous Air Pollutants and Source Categories (NESHAPS) Proposed Revision Rule 425 - Cogeneration Gas Turbine Engines (Oxides of Nitrogen) Proposed Revision Rule 425.3 - Portland Cement Kilns (Oxides of Nitrogen) A public workshop was held on November 2, 2017. California Air Resources Board (ARB) and US Environmental Protection Agency (EPA) also reviewed the proposals. All comments have been considered and addressed in the final draft of each proposed rule's respective staff report. NOTICE IS FURTHER GIVEN that if adopted, the rules will be submitted through ARB to EPA for incorporation as part of the California State Implementation Plan (SIP). This action would constitute a SIP revision. Interested persons may appear at the hearing and make oral comments. Written comments are invited for consideration and will be accepted until the close of business on January 8, 2018. Correspondence should be addressed to Glen E. Stephens, APCO, at EKAPCD, 2700 M St, Ste 302, Bakersfield, CA 93301. Copies of the proposed draft and amended rules and respective staff reports are available for review at the EKAPCD office located at 2700 M St, Ste 302, Bakersfield, CA 93301. You may also download a copy from the District's website at www.kernair.org or call (661) 862-5250 and request a copy.

December 8, 2017
14422079

AFFIDAVIT OF PUBLICATION

State of California
County of Kern

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the Mojave Desert News, a newspaper that has been adjudicated to be a newspaper of general circulation by the Superior Court of the County of Kern, State of California on October 13th 1939 Case number 34058 in and for the County of Kern State of California that the notice which the annexed is a true printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit
I certify under the penalty of perjury under the laws of the State of California that the foregoing is true and correct
12/15/2017
Signed: Misty Hickok
Office Manager
12/15/2017

NOTICE OF PUBLIC HEARING ON PROPOSED DRAFTS AND AMENDMENTS TO RULES AND REGULATIONS

NOTICE IS HEREBY GIVEN that a public hearing will be held at 2:00 pm on January 11, 2018 in the Tehachapi Police Department Community Room, 220 West "C" Street, Tehachapi, California 93561. At the hearing Eastern Kern Air Pollution Control District (EKAPCD) Governing Board will consider adoption of the following: Proposed Revision Regulation II - Permits (List and Criteria) Proposed Revision Rule 208.2- Criteria For Finding of No Significant Environmental Impact (California Environmental Quality Act) Proposed Draft Rule 210.1A - Major New and Modified Stationary Source Review (MNSR) Proposed Revision Rule 422 - New Source Performance Standards Proposed Revision Rule 423 - National Emission Standards for Hazardous Air Pollutants and Source Categories (NESHAPS) Proposed Revision Rule 425 - Cogeneration Gas Turbine Engines (Oxides of Nitrogen) Proposed Revision Rule 425.3 - Portland Cement Kilns (Oxides of Nitrogen) A public workshop was held on November 2, 2017. California Air Resources Board (ARB) and US Environmental Protection Agency (EPA) also reviewed the proposals. All comments have been considered and addressed in the final draft of each proposed rule's respective staff report. NOTICE IS FURTHER GIVEN that if adopted, the rules will be submitted through ARB to EPA for incorporation as part of the California State Implementation Plan (SIP). This action would constitute a SIP revision. Interested persons may appear at the hearing and make oral comments. Written comments are invited for consideration and will be accepted until the close of business on January 8, 2018. Correspondence should be addressed to Glen E. Stephens, APCO, at EKAPCD, 2700 M St, Ste 302, Bakersfield, CA 93301.Copies of the proposed draft and amended rules and respective staff reports are available for review at the EKAPCD office located at 2700 M St, Ste 302, Bakersfield, CA 93301. You may also download a copy from the District's website at www.kernair.org or call (661) 862-5250 and request a copy.

Published in The Mojave Desert News
12/15/17

SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF KERN

NOPH
EKAPCD

Case Number Rules & Regulations

DECLARATION OF PUBLICATION (2015.5 C.C.P.)

State of California, County of Kern, ss:

Declarant says:

That at all times, herein mentioned declarant is and was a citizen of the United States, over the age of twenty-one years, and not a party to nor interested in the within matter; that declarant is the principal clerk of the printer and the publisher of THE DAILY INDEPENDENT, a newspaper of general circulation printed and published daily in the City of Ridgecrest, Indian Wells Judicial District, County of Kern, State of California, which newspaper has been adjudged a newspaper of general circulation by the said Superior Court by order made and renewed July 8, 1952, in Civil Proceeding No. 58584 of said Court: that the instrument of which the annexed in a printed copy has been published in each regular and like issue of said newspaper (and not any supplement thereof) on the following dates, to-wit:

12/9/17

I declare under penalty of perjury that the foregoing is true and correct.

EXECUTED ON December 11, 2017, at Ridgecrest California.

Declarant Tina Amadisto

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(12/09/2017)

Eastern Kern Air Pollution Control District

Rule 425
STATIONARY GAS TURBINES (OXIDES OF NITROGEN)

FINAL STAFF REPORT

January 11, 2018

Prepared by

Wunna Aung
Air Quality Engineer

Reviewed by

Glen Stephens, P.E.
Air Pollution Control Officer

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2700 "M" Street, Suite 302
Bakersfield, California 93301
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I. BOARD ADOPTION

Amendments to Rule 425, Cogeneration Gas Turbine Engines (Oxides of Nitrogen) was adopted by the Eastern Kern Air Pollution Control District's Governing Board on January 11, 2018 at the Tehachapi Police Department Community Room, located at 220 West "C" Street, Tehachapi, California and at the Ridgecrest City Hall, located at: 100 West California Avenue, Ridgecrest, California.

II. INTRODUCTION

This staff report presents the amendments made to Rule 425, Cogeneration Gas Turbine Engines (Oxides of Nitrogen). Rule 425 was originally adopted August 16, 1993. The primary reason for amending Rule 425 is to update NOx emission limits promulgated by the EPA. NOx compounds are precursors in the formation of ground level ozone and particulate matter. The District has nonattainment status for the federal 8-hour ozone standard. This staff report presents an extensive revision of the Rule.

A majority of Rule 425 amendments are modeled after California Air Resources Board (ARB)'s *Determination of Reasonably Available Control Technology and Best Available Retrofit Control Technology for the Control of Oxides of Nitrogen from Stationary Gas Turbines*[1]. Similar rules can also be found in Placer County and Yolo Solano Air Quality Management Districts.

On November 2, 2017 the District held a public rule development workshop at the Mojave Veteran's Building in Mojave, CA. At the workshop, District staff presented proposed amendments to Rule 425. A 30-day public review and comment period followed the workshop ending on December 4, 2017.

Appendix A is the clean version of Rule 425, Stationary Gas Turbines (Oxides of Nitrogen).

Appendix B shows all changes made to Rule 425, Stationary Gas Turbines (Oxides of Nitrogen) in strikeout underline form.

Appendix C is District's response to comments following the November 2, 2017 public workshop held at the Mojave Veteran's Center in Mojave, CA.

III. RULE OVERVIEW

Amended rule lowers the current NOx limits for stationary gas turbines with rated heat input of 10.0 megawatts (MW) or more and fired with gaseous or liquid fuels. The rule also has NOx limits for units rated from 0.88 MW to 10.0 MW.

[1] Complete Document can be found at: https://www.arb.ca.gov/research/apr/reports/l3092.pdf

IV. EMISSIONS FROM GAS TURBINE ENGINES

Stationary gas turbines emit NOx from combustion of fuels. NOx is one of two precursors in the formation of ozone which is the primary component of smog. The second precursor is volatile organic compounds (VOCs). Because the District has nonattainment status for federal 8-hour ozone standard, the District is required to implement all feasible State and Federal measures to reduce emissions of ozone precursors, including NOx. NOx reacts photochemically with VOCs to form ozone. Ozone irritates human respiratory systems and damages plant life and property. Exposure to ozone can be associated with hospitalization for cardiopulmonary causes, asthma episodes, restrictions in physical activity, and premature death. NOx emissions from cogeneration gas turbine engines can also react with other pollutants to form airborne particles smaller than 2.5 micrometer (microns) in diameter called $PM_{2.5}$. When inhaled, $PM_{2.5}$ can travel deep into the lungs and reduce lung function.

V. NOx EMISSIONS REDUCTION (CONTROL TECHNOLOGY)

Reducing NOx emissions from stationary gas turbines can be achieved by applying the following control technologies

A. Water or steam injection;
B. Dry low-NOx combustors; and
C. Selective Catalytic Reduction (SCR).

A. Water or steam injection

Injection of water or steam reduces the combustion temperature inside the turbine's combustion chamber. This temperature reduction decreases the amount of NOx produced. In most cases, the use of water or steam injection results in exhaust gas concentrations of 42 ppmv at 15% oxygen when firing on natural gas and 65 ppmv when firing on liquid fuel.

B. Dry Low-NOx Combustors

The use of dry low NOx combustors are special combustion chambers that are designed to improve the combustion process and decrease NOx emissions. Low-NOx combustors are only available for selected turbine models. Controlled NOx emission levels range from 9 to 15 ppmv at 15% oxygen.

C. Selective Catalytic Reduction (SCR)

Selective catalytic reduction (SCR) is a post combustion control technology. In the SCR process, ammonia (NH_3) is injected into the exhaust gas stream in the presence of a catalyst. NH_3 reacts with the NOx to form water and nitrogen. SCR is capable of over 90% NOx removal and is often combined with water or steam injection to achieve very low NOx levels when firing on gas.

VI. COST-EFFECTIVENESS

ARB's *Determination of Reasonably Available Control Technology (RACT) and Best Available Retrofit Control Technology (BARCT) for the Control of Oxides of Nitrogen from Stationary Gas Turbines, 1992*, and EPA's ACT Document – *NOx Emissions from Stationary Gas Turbines, 1993*, listed cost effectiveness for control technologies mentioned above.

According to Appendix D from ARB's 1992 document, availability of SCR retrofit and cost effectiveness to install a possible SCR system to Westinghouse W251B10 was investigated. According to the report, there were no SCR manufacturer for the unit and the installation of an SCR system would not be cost-effective. The District required the unit to install low-NOx combustors and achieve 25 ppmv of NOx.

VII. APPLICABILITY

Rule 425 will apply to any stationary gas turbine with a rating equal to or greater than 0.88 megawatts (MW).

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VIII. CHANGES IN RULE 425

The following requirements have been added to Rule 425:

- The purpose of this Rule is to limit oxides of nitrogen (NOx) emissions from stationary gas turbines.

- Combined Cycle: Any stationary gas turbine operated both for the production of electrical energy from shaft work and the useful energy produced from heat recovered from its exhaust gases.

- Liquid Fuel: Any fuel, including distillate and residual oil, existing as liquid at standard conditions.

- Power Augmentation: An increase in the gas turbine shaft output or the decrease in turbine fuel consumption by the addition of energy recovered from exhaust heat.

- Simple Cycle: Any stationary gas turbine in which all electric generators are driven by shaft work from fuel combustion.

- Standard Conditions: As defined in Rule 102, Subsection RR.

- Stationary Gas Turbine: any gas turbine system, with or without power augmentation, which is permanently attached to a foundation, or is not a portable gas turbine. The gas turbine is not self-propelled nor intended to be propelled while performing its function, although it may be mounted onto a foundation. Two or more gas turbines powering a common shaft shall be treated as one gas turbine.

- Shut-Down Period: The time necessary to cease operation of a gas turbine from operating under load conditions. The time shall not exceed one (1) hour.

- Start-Up Period: The time necessary to bring operation of a gas turbine up to the designed rating. The time shall not exceed six (6) hours for combined cycle gas turbine power plants or two (2) hours for simple cycle gas turbine power plants.

- <u>Exemptions</u>

  The provision of this Rule shall not apply to the operation of stationary gas turbines under the following conditions:

  A. Emergency standby units demonstrated to operate less than 200 hours per year.
  B. Units less than 4 MW that operate less than 877 hours per year.

C. Laboratory units used in research and testing for the advancement of gas turbine technology.
D. Units operated exclusively for firefighting and/or flood control.
E. Units used in test cells and test stands.
F. Portable equipment registered in accordance with California Air Resources Board regulations under 13 CCR 2450-2465, Portable Equipment Registration Program (PERP) or 13 CCR 2420 Off-road Compression Ignition Engines and Equipment. Portable turbine engines used by the Department of Defense or National Guard exclusively used for military tactical support or other federal emergency purposes.

- Emission Limits

  The owner or operator of any stationary gas turbine unit shall not operate such unit under load conditions, excluding the start-up or shut-down period which results in the measured NOx emissions concentration exceeding the compliance limit listed below, averaged over one (1) hour based on four consecutive 15-minute averages:

Unit Size Megawatt Rating (MW)	**Compliance Limit NOx, ppmv at 15% O_2**	
	Gaseous Fuel	**Liquid Fuel**
Units Rated 0.88 to Less Than 2.9 MW OR Units Greater Than or Equal to 4 MW That Operate Less Than 877 Hour/Year	42	65
2.9 MW to Less Than 10 MW	25	65
10.0 MW and Greater	9	25

- The owner or operator of Westinghouse W251B10 with Authority to Construct issued before January 1, 1983 using dry low-NOx combustors shall have the following NOx emission limits:

  1. 25 ppmv at 15% O_2 when fired with gaseous fuel or,

  2. 65 ppmv at 15% O_2 when fired with liquid fuel.

- Start-up/Shut-down Combined Cycle Units

  The NOx emissions shall meet at least one of the following averaged over the duration of the start-up or shut-down period:

  1. 70 ppmv at 15% O_2 for turbines fired with gaseous fuel or,

2. 226 ppmv at 15% O_2 for turbines fired with liquid fuel.

- Start-up/Shut-down Simple Cycle Units

  The NOx emission shall be kept to a minimum by use of the following:

  1. Manufacturer's recommendation for operation during start-up and shut-down.

  2. Injection of water as soon as reasonably possible.

  3. Maintaining proper air to fuel ratios.

- Exempt Units

  Exempt units shall comply with the following:

  1. The owner or operator of any unit exempt under Section IV shall submit support documentation to the Air Pollution Control Officer within seven days if the hour-per-year limit is exceeded. If the hour-per-year limit is exceeded, the exemption shall be permanently withdrawn. Within 30 days after the exceedance, the owner or operator shall submit an application for Authority to Construct that details a plan to meet the applicable limits specified in Section V of this Rule. Included in the application, the owner or operator shall submit a schedule of increments of progress for the installation of the required control equipment. This schedule shall not exceed four years from the date of the receipt of Authority to Construct application.

  2. A public service unit operating during a state of emergency, when such emergency is declared by proclamation of the Governor of the State of California and when the unit is located in the specific geographical location identified in the proclamation, shall be excluded from the hour-per-year limit.

- Monitoring and Recordkeeping

  1. Submit to the Air Pollution Control Officer, prior to issuance of Permit to Operate, information correlating the control system operating parameters to the associated NOx output. This information may be used by the Air Pollution Control Officer to determine compliance when there is no continuous emission monitoring system for NOx available or when the continuous emission monitoring system is not operating properly.

2. Provide source test information regarding the exhaust gas NOx concentration at ISO conditions corrected to 15 percent oxygen on a dry basis.

The following requirements of Rule 425 have been revised:

- Applicability of stationary gas turbine has been revised from: ~~*a rating equal to or greater than 10.0 megawatts (MW).*~~ To: a rating equal to or greater than 0.88 megawatts (MW).

- Definition of Gas Fired has been revised from: ~~*using gaseous fuel as normal (not standby) fuel.*~~ To: Gaseous Fuel: any fuel existing as gas at standard conditions.

- Definition of NOx Emission Concentration has been revised from: ~~*oxides of nitrogen concentration calculated using the equation in Section VI (or an EPA-approved correlation).*~~ To: Oxides of Nitrogen (NOx): total nitrogen oxides (expressed as NO_2).

- Definition of SCR has been revised from: ~~*exhaust gas NOx control system utilizing ammonia and a reducing catalyst to convert NOx to nitrogen and oxygen.*~~ To: Selective Catalyst Reduction (SCR): a post-combustion control technology that utilizes a reducing agent, such as ammonia, injected into the exhaust stream where it converts NOx to molecular nitrogen in the presence of a catalyst.

- Emission control plan from administrative requirements have been revised from

  ~~*The owner or operator of any existing cogeneration gas turbine engine subject to this Rule shall submit to the APCO for approval an emissions control plan, including a schedule of increments of progress to be taken to meet or exceed requirements of Section IV to comply with the compliance schedule prescribed by Section VII. An emissions control plan shall be submitted for each cogeneration gas turbine engine subject to this Rule, including:*~~

  1. ~~*KCAPCD Permit number,*~~
  2. ~~*Gas turbine manufacturer's name,*~~
  3. ~~*Gas turbine model number,*~~
  4. ~~*Rated electrical energy output (MW) and rated heat recovery (Btu/hr),*~~
  5. ~~*Type of fuel (gas, and/or liquid),*~~
  6. ~~*HHV for each fuel,*~~
  7. ~~*Last year's fuel consumption (cubic feet of gas or gallons of liquid per hour),*~~
  8. ~~*Last year's hours of operation,*~~

9. ~~*Heat rate (Btu/kw-hr) calculated using HHV for each type of fuel,*~~
10. ~~*Type of emissions control to be applied to engine, and*~~
11. ~~*Documentation showing current NOx emissions concentration.*~~

To:

The owner or operator of any existing stationary gas turbine subject to this Rule shall submit to the APCO for approval an emissions control plan, including a schedule of increments of progress to be taken to meet or exceed requirements of Section V to comply with the compliance schedule prescribed by Section VIII.

An emissions control plan shall be submitted for each stationary gas turbine subject to this Rule, including:

1. District permit number,
2. Gas turbine manufacturer's name and model number,
3. Rated electrical energy output (MW) and rated heat recovery (Btu/hr),
4. Type of fuel (gas and/or liquid),
5. Last year's fuel consumption (cubic feet of gas or gallons of liquid),
6. Last year's hours of operation,
7. Type of emissions control to be applied to engine, and
8. Documentation showing current NOx emissions concentration.

- Monitoring and Recordkeeping requirement has been revised from:

~~*1. Install, operate and maintain in calibration, equipment approved by the Control Officer, capable of continuously measuring and recording the following:*~~

~~*a. Engine and/or emissions control system operating parameters as correlated to NOx emissions,*~~
~~*b. Elapsed time of operation,*~~
~~*c. NOx emissions concentration. The NOx monitoring system shall meet EPA requirements as specified in 40 CFR Part 60, App. B, Spec. 2, or other systems approved by EPA. The owner or operator shall submit to the Control Officer information demonstrating the emission monitoring system has data gathering and retrieval capability. When this system is not operational, data gathered for Subsection a., above, shall be used to establish NOx emissions concentration. Continuous NOx monitoring for gas turbines not using SCR shall not be required until January 1, 1997.*~~

To:

1. Install, operate, and maintain in calibration equipment capable of continuously measuring and recording the following:

    a. Control system operating parameters:

        i. Periodic NOx emission concentrations,
        ii. Turbine exhaust oxygen concentration,
        iii. Air-to-fuel ratio,
        iv. Flow rate of reducing agents added to turbine exhaust,
        v. Catalyst inlet and exhaust temperature,
        vi. Catalyst inlet and exhaust oxygen concentration,
        vii. Other operational characteristics.

    b. Elapsed time of operation measured by an hourly meter.

2. For units with 10 MW or greater, the owner or operator shall monitor the exhaust gas NOx concentrations. The NOx monitoring system shall meet EPA requirements as specified in 40 CFR Part 60, Appendix B, Specification 2, or other systems approved by EPA. The owner or operator shall submit to the Air Pollution Control Officer the information demonstration that emission monitoring system has data gathering and retrieval capability.

- Monitoring and Recordkeeping requirement has been revised from:

    ~~*Maintain and make available for District inspection at any time all records for a period of two years.*~~

    To:

    Maintain and make all records available for District inspection at any time for a period of five (5) years.

- Compliance Testing requirement has been revised from:

    ~~*The owner or operator of any cogeneration gas turbine engine subject to provisions of this rule shall conduct annual testing showing NOx emissions concentration as defined in Subsection III.G, and demonstrated percent efficiency (EFF) of the gas turbine engine.*~~

    To:

    The owner or operator of any stationary gas turbine subject to provisions of this rule shall conduct annual testing using the methods specified in Section VI.D below.

- Compliance Test Methods have been revised from

  ~~*1. Oxides of nitrogen emissions shall be determined using EPA Method 7E.*~~
  ~~*2. Exhaust gas oxygen content shall be determined using EPA Method 3A.*~~

  To:

  1. Oxides of nitrogen (NOx) emissions shall be determined using EPA Method 7E or EPA Method 20 or ARB Method 100.
  2. Exhaust gas Oxygen (O_2) concentration content shall be determined using EPA Method 3A or ARB Method 100.

- Compliance Schedule has been revised from

  ~~*An owner or operator of a cogeneration stationary gas turbine engine subject to Section IV BACT limits and not currently achieving such limits shall comply with requirements of Section IV in accordance with the following schedule:*~~

  ~~*A. By (18 months after rule adoption date), submit to the Control Officer a compliance plan, and a complete application for Authority to Construct for all necessary equipment modifications subject to Rule 201.*~~

  ~~*B. By January 1, 1997, demonstrate full compliance.*~~

  To:

  An owner or operator of a stationary gas turbine subject to Section V and not currently achieving such limits shall comply with requirements of Section V in accordance with the following schedule:

  A. By (18 months after rule adoption date), submit to the Control Officer a compliance plan, and a complete application for Authority to Construct for all necessary equipment modifications subject to Rule 201.

  B. By January 1, 2021, demonstrate full compliance.

The following requirements of Rule 425 have been deleted:

- ~~*The purpose of this Rule is to require retrofit of oxides of nitrogen (NOx) Best Available Control Technology (BACT) to cogeneration gas turbine engines subject to California Health and Safety Code Section 40918(b) and compliance with Reasonably Available Control Technology (RACT) NOx limits for cogeneration gas turbine engines subject to 1990 Federal Clean Air Act Section 182(f).*~~

- ~~*Cogeneration Gas Turbine Engine - an internal combustion gas or liquid-fueled device consisting of compressor, combustor, and power turbine used to power an electrical generator and generate steam (or useful heat)*~~

- ~~*Engine and/or emissions control system operating parameters – key indicators of gas turbine engine and/or emissions control system performance, including ammonia injection rate and catalyst bed temperature for SCR; water (or steam) injection rate; or operating conditions of a dry low NOx combustor.*~~

- ~~*HHV – higher heating value of fuel.*~~

- ~~*LHV – lower heating value of fuel.*~~

- ~~*Oil-Fired – using liquid fuel as normal (not standby) fuel*~~

- ~~*Thermal Stabilization Period – start up time necessary to bring a cogeneration system heat recovery device up to design temperature, not exceeding two hours.*~~

- ~~***Requirements***~~

  ~~*The NOx emissions concentration (ppmv) from any cogeneration gas turbine engine subject to this Rule shall not exceed the following limit while operating under load and after the thermal stabilization period:*~~

  ~~*A. Gas turbine using SCR for NOx control:*~~

	~~*Gas-Fired*~~	~~*Oil-Fired*~~
~~*RACT limit until January 1, 1997:*~~	~~*10*~~	~~*40*~~
~~*BACT limit on and after January 1, 1997:*~~	~~$9 \times \frac{EFF}{25}$~~	~~$25 \times \frac{EFF}{25}$~~

  ~~*B. Westinghouse 251B10 gas turbine with Authority to Construct issued before 1/1/83 using dry low-NOx combustor(s) to meet January 1, 1997 limit:*~~

	~~*Gas-Fired*~~	~~*Oil-Fired*~~
~~*RACT limit until January 1, 1997:*~~	~~*96*~~	~~*114*~~
~~*BACT limit on and after January 1, 1997:*~~	~~$20 \times \frac{EFF}{25}$~~	~~$42 \times \frac{EFF}{25}$~~

  ~~*Percent EFF (efficiency) shall be the higher of EFF_1 or EFF_2 below. An EFF less than 25 shall be assigned a value of 25.*~~

  ~~*EFF_1 = 3,412 Btu/kw-hr x 100% / Actual Heat Rate at HHV, Btu/kw-hr*~~

  ~~*EFF_1 is the demonstrated percent thermal efficiency of the gas turbine engine only, calculated from the actual heat input (using HHV) without*~~

~~*consideration of any downstream energy recovery; calculated at ISO conditions; and measured at peak load.*~~

~~*$EFF_2 = EFF_{mfr} \times LHV/HHV$*~~

~~*Where EFF_{mfr} is the manufacturer's continuous rated percent thermal efficiency of the gas turbine engine with air pollution control equipment in operation and using fuel LHV. EFF_2 is EFF_{mfr} after correction from LHV to HHV at peak load*~~

- ~~*Compliance Test Methods*~~

~~*3. HHV and LHV of liquid fuels shall be determined using:*~~

~~*a. ASTM D240-87, Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter, or*~~

~~*b. ASTM D2382-88, Standard Test Method for Heat of Combustion of Hydrocarbon Fuels by Bomb Calorimeter (High-precision Method).*~~

~~*4. HHV and LHV of gaseous fuels shall be determined using:*~~

~~*a. ASTM D3588-91, Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density (Specific Gravity) of Gaseous Fuels, or*~~

~~*b. ASTM 1826-88, Standard Test Method for Calorific (Heating) Value of Gases in Natural Gas Range by Continuous Recording Calorimeter, or*~~

~~*c. ASTM 1945-81, Standard Method for Analysis of Natural Gas by Gas Chromatography.*~~

~~5. *Percent efficiency of the gas turbine engine shall be determined using actual field measurements for gas turbine fuel consumption and power output.*~~

IX. IMPACTS

A. Economic

The amended regulation would impose costs on turbine owners for which they will receive no corresponding revenue. Owners may experience any combination of the following costs: downtime for retrofit, retrofit, increased maintenance costs, and increased water consumption. These costs could result in increased energy prices. Sectors which would experience an economic stimulus include pollution control manufacturers, engineering firms, and plumbing, electrical, and other contractors.

B. Air Quality

Imposing NOx controls would reduce NO_2 levels, PM_{10} emissions, and acid deposition. Visibility should improve. The reduction of NOx should also result in a decrease in ozone levels, depending upon a number of parameters including the NOx/HC ratio. Carbon monoxide emissions can increase from the use of water/steam injection. Mitigation measures include modifications to the combustion parameters (oxygen, temperature, time), equipment (fuel nozzles, combustion chamber), and the addition of post combustion controls.

C. Hazards

The use of SCR will result in free ammonia, PM_{10}, and SO_3 emissions. Ammonia emissions at high concentrations can create an odor nuisance. However, the impact can be mitigated by proper stack design. Free ammonia emissions in the exhaust can form PM_{10} constituents such as ammonium sulfate or ammonium nitrate aerosols. Most areas in California are in violation of the state and federal ambient PM_{10} standard. The risk of ammonia slip could be partially mitigated (to at least below 20 ppm) by specifying ammonia discharge limits on the operating permits and by carefully controlling ammonia injection with monitoring equipment. However, this determination has no requirement for ammonia monitors or ammonia slip limits. Nevertheless, because ammonia slip cannot be completely mitigated, the risk of ammonia emissions must be weighed against the benefits of NOx reduction.

Ammonia is a hazardous (flammable) and toxic compound and its production, use, storage, and transport can be hazardous, especially in the case of worker contact with liquid ammonia or exposure to highly concentrated ammonia vapor. The risk of accidental ammonia releases and associated health impacts can be reduced significantly by proper design practices, alarm systems, safety programs, and worker training programs. Such programs have be developed by the chemical industry and are set forth in various publications. SCR related ammonia storage and handling will also create a potential increase in work place hazards form possible feedline ruptures during earthquakes.

Also, there is speculation that conditions in the SCR system may encourage the conversion of ammonia into nitrosamines, which are toxic, carcinogenic, and mutagenic. However, two independent source tests for nitrosamines have been conducted on the flue gas of units equipped with SCR. Neither source test detected the presence of nitrosamines.

Ammonia emissions at high enough concentrations can also create an odor nuisance if there is not adequate stack dispersion. Nuisance impacts can be completely mitigated by proper stack design. The amount of SO_3 emissions can be minimized by using low sulfur fuel. It should be noted that total SOx

emissions are not increased. The amount of directly emitted SO_3 is increased as a ratio of total SOx emitted and corresponding a reduction in SO_2 emissions occurs.

SCR catalyst materials may contain small amounts of hazardous materials, including vanadium pentoxide. This compound is toxic if inhaled. Also, spent catalyst material must be safely disposed of. The first issue, particle inhalation from catalyst erosion, can be minimized by modifying the catalyst chamber to protect the catalyst from direct exposure to exhaust particulates. The second issue, catalyst disposal, is minimal because the spent catalyst is returned to the catalyst vendors for proper disposal or recycling the catalyst.

D. Energy

The use of NOx reduction technologies would generally have some level of fuel energy penalty or may require small amounts of energy for their operation. For example, the conversion of natural gas to methanol or ammonia requires natural gas for feedstock and fuel. The diversion of natural gas to make methanol and ammonia could impact the availability of natural gas for utility fuel. For methanol, however, the energy loss is partially offset by an improvement of turbine efficiency. An example of operational energy is the energy required to operate the SCR system. The use of SCR results in a 0.7 percent fuel penalty.

X. SOCIOECONOMIC IMPACTS

CHSC Section 40728.5 exempts districts with a population of less than 500,000 persons from the requirement to assess the socioeconomic impacts of proposed rules. Eastern Kern County population is below 500,000 persons.

XI. RULE APPROVAL PROCESS

The District accepted written comments and concerns from persons interested in Amended Rule 425 for a period of 30 days following the November 2, 2017 workshop. All written comments have been addressed as detailed in Appendix C of this staff report. District adopted the amendments of Rule 425 at the January 2018 Board Hearing. Upon adoption, Rule 425 will be sent to ARB to be forwarded to EPA as revision to the SIP.

APPENDIX A:

AMENDED RULE 425

STATIONARY GAS TURBINES (OXIDES OF NITROGEN)

CLEAN VERSION

RULE 425 **Stationary Gas Turbines (Oxides of Nitrogen)** - Adopted 8/16/93, Amended 1/11/18.

I. Purpose

The purpose of this Rule is to limit oxides of nitrogen (NOx) emissions from stationary gas turbines.

II. Applicability

The provisions of this Rule shall apply to any stationary gas turbine with a rating equal to or greater than 0.88 megawatts (MW) operating in the Eastern Kern Air Pollution Control District (District).

III. Definitions

A. Combined Cycle: Any stationary gas turbine operated both for the production of electrical energy from shaft work and the useful energy produced from heat recovered from its exhaust gases.

B. Dry Low-NOx Combustor: Any gas turbine engine combustor using staging, air/fuel premixing or other design features to reduce NOx emissions.

C. Gaseous Fuel: Any fuel existing as gas at standard conditions.

D. Liquid Fuel: Any fuel, including distillate and residual oil, existing as liquid at standard conditions.

E. Oxides of Nitrogen (NOx): Total nitrogen oxides (expressed as NO_2).

F. Power Augmentation: An increase in the gas turbine shaft output and/or the decrease in gas turbine fuel consumption by the addition of energy recovered from exhaust heat.

G. Rating: Manufacturer's continuous electrical output megawatt (MW) specification for a gas turbine system.

H. Simple Cycle: Any stationary gas turbine in which all electric generators are driven by shaft work from fuel combustion.

I. Selective Catalytic Reduction (SCR): A post-combustion control technology that utilizes a reducing agent, such as ammonia, injected into the exhaust gas stream where it converts NOx to molecular nitrogen in the presence of a catalyst.

J. Stationary Gas Turbine: Any gas turbine system, with or without power augmentation, which is permanently attached to a foundation, or is not a portable gas turbine. The gas turbine is not self-propelled nor intended to be propelled while

performing its function, although it may be mounted onto a foundation. Two or more gas turbines powering a common shaft shall be treated as one gas turbine.

K. Standard Conditions: As defined in Rule 102, Subsection RR.

L. Shut-Down Period: The time necessary to cease operation of a gas turbine from operating under load conditions. The time shall not exceed one (1) hour.

M. Start-Up Period: The time necessary to bring operation of a gas turbine up to the designed rating. The time shall not exceed six (6) hours for combined cycle gas turbine power plants or two (2) hours for simple cycle gas turbine power plants.

IV. Exemptions

The provision of this Rule shall not apply to the operation of stationary gas turbines under the following conditions:

A. Emergency standby units demonstrated to operate less than 200 hours per year.
B. Units less than 4 MW that operate less than 877 hours per year.
C. Laboratory units used in research and testing for the advancement of gas turbine technology.
D. Units operated exclusively for firefighting and/or flood control.
E. Turbines used in test cells and test stands.
F. Portable equipment registered in accordance with ARB regulations under 13 CCR 2450-2465, Portable Equipment Registration Program (PERP) or 13 CCR 2420 Off-road Compression-ignition Engines and Equipment. Portable turbines used by the Department of Defense or National Guard exclusively used for military tactical support or other federal emergency purposes.

V. Requirements

A. Emission Limits

The owner or operator of any stationary gas turbine unit shall not operate such unit under load conditions, excluding the start-up or shut-down period which results in the measured NOx emissions concentration exceeding the compliance limit listed below, averaged over one (1) hour based on four consecutive 15-minute averages:

Unit Size Megawatt Rating (MW)	**Compliance Limit NOx, ppmv at 15% O_2**	
	Gaseous Fuel	**Liquid Fuel**
Units Rated 0.88 to Less Than 2.9 MW OR Units Greater Than or Equal to 4 MW That Operate Less Than 877 Hour/Year	42	65
2.9 MW to Less Than 10 MW	25	65
10.0 MW and Greater	9	25

B. The owner or operator of Westinghouse W251B10 with Authority to Construct issued before January 1, 1983 using dry low-NOx combustors shall have the following NOx emission limits:

1. 25 ppmv at 15% O_2 when fired with gaseous fuel or,

2. 65 ppmv at 15% O_2 when fired with liquid fuel.

C. Start-up/Shut-down Combined Cycle Units

The NOx emissions shall meet at least one of the following averaged over the duration of the start-up or shut-down period:

1. 70 ppmv at 15% O_2 for turbines fired with gaseous fuel or,

2. 226 ppmv at 15% O_2 for turbines fired with liquid fuel.

D. Start-up/Shut-down Simple Cycle Units

The NOx emission shall be kept to a minimum by use of the following:

1. Manufacturer's recommendation for operation during start-up and shut-down.

2. Injection of water as soon as reasonably possible.

3. Maintaining proper air to fuel ratios.

VI. Administrative Requirements

A. Emission Control Plan

The owner or operator of any existing stationary gas turbine subject to this Rule shall submit to the APCO for approval an emissions control plan, including a schedule of increments of progress to be taken to meet or exceed requirements of Section V to comply with the compliance schedule prescribed by Section VIII.

An emissions control plan shall be submitted for each stationary gas turbine subject to this Rule, including:

1. District permit number,
2. Gas turbine manufacturer's name and model number,
3. Rated electrical energy output (MW) and rated heat recovery (Btu/hr),
4. Type of fuel (gas and/or liquid),
5. Last year's fuel consumption (cubic feet of gas or gallons of liquid),
6. Last year's hours of operation,
7. Type of emissions control to be applied to engine, and
8. Documentation showing current NOx emissions concentration.

B. Monitoring and Recordkeeping

The owner or operator of any stationary gas turbine subject to the provisions of this rule shall perform the following actions:

1. Install, operate, and maintain in calibration equipment capable of continuously measuring and recording the following:

    a. Control system operating parameters:

        i. Periodic NOx emission concentrations,
        ii. Turbine exhaust oxygen concentration,
        iii. Air-to-fuel ratio,
        iv. Flow rate of reducing agents added to turbine exhaust,
        v. Catalyst inlet and exhaust temperature,
        vi. Catalyst inlet and exhaust oxygen concentration,
        vii. Other operational characteristics.

    b. Elapsed time of operation measured by an hourly meter.

2. For units with 10 MW or greater, the owner or operator shall monitor the exhaust gas NOx concentrations. The NOx monitoring system shall meet EPA requirements as specified in 40 CFR Part 60, Appendix B, Specification 2, or other systems approved by EPA. The owner or operator shall submit to the Air Pollution Control Officer the information demonstrating that emission monitoring system has data gathering and retrieval capability.

3. Submit to the Air Pollution Control Officer, prior to issuance of Permit to Operate, information correlating the control system operating parameters to the associated NOx output. This information may be used by the Air Pollution Control Officer to determine compliance when there is no continuous emission monitoring system for NOx available or when the continuous emission monitoring system is not operating properly.

4. Provide source test information regarding the exhaust gas NOx concentration at ISO conditions corrected to 15 percent oxygen on a dry basis.

5. Maintain a stationary gas turbine engine operating log, including, on a daily basis, actual start-up and stop times, total hours of operation, and type and quantity of fuel used (liquid/gas).

6. Maintain and make all records available for District inspection at any time for a period of five (5) years.

C. Compliance Testing

The owner or operator of any stationary gas turbine subject to provisions of this rule

rule shall conduct annual testing using the methods specified in Section VI.D below.

D. Test Methods

1. Oxides of nitrogen (NOx) emissions shall be determined using EPA Method 7E or EPA Method 20 or ARB Method 100.

2. Exhaust gas Oxygen (O_2) concentration content shall be determined using EPA Method 3A or ARB Method 100.

E. Exempt Units

Exempt units shall comply with the following:

1. The owner or operator of any unit exempt under Section IV shall submit support documentation to the Air Pollution Control Officer within seven days if the hour-per-year limit is exceeded. If the hour-per-year limit is exceeded, the exemption shall be permanently withdrawn. Within 30 days after the exceedance, the owner or operator shall submit an application for Authority to Construct that details a plan to meet the applicable limits specified in Section V of this Rule. Included in the application, the owner or operator shall submit a schedule of increments of progress for the installation of the required control equipment. This schedule shall not exceed four years from the date of the receipt of Authority to Construct application.

2. A public service unit operating during a state of emergency, when such emergency is declared by proclamation of the Governor of the State of California and when the unit is located in the specific geographical location identified in the proclamation, shall be excluded from the hour-per-year limit.

VII. Calculations

NOx emissions concentrations shall be calculated using the following equation:

$$NOx = (NOx_{obs})\ (P_{ref}/P_{obs})^{0.5}\ (288\ K/T_{amb})^{1.53}(e^{19(Hobs-0.00633)})$$

where:

NOx	=	NOx emissions concentration (ppmv) corrected to 15 percent oxygen and ISO standard conditions on a dry basis.
NOx_{obs}	=	Measured stack gas NOx emissions concentration (ppmv) corrected to 15 percent oxygen on a dry basis.
P_{ref}	=	standard atmospheric pressure (14.7 psia).
P_{obs}	=	atmospheric pressure measured at site during testing, psia.
H_{obs}	=	absolute ambient humidity measured at site during testing, pounds water per pound dry air.
e	=	transcendental constant (2.718).
T_{amb}	=	ambient air temperature in K and measured at site during testing.

VIII. Compliance Schedule

An owner or operator of a stationary gas turbine subject to Section V and not currently achieving such limits shall comply with requirements of Section V in accordance with the following schedule:

A. By (18 months after rule adoption date), submit to the Control Officer a compliance plan, and a complete application for Authority to Construct for all necessary equipment modifications subject to Rule 201.

B. By January 1, 2021, demonstrate full compliance.

APPENDIX B:

AMENDED RULE 425

STATIONARY GAS TURBINES (OXIDES OF NITROGEN)

STRIKEOUT UNDERLINE VERSION

RULE 425 ~~Cogeneration~~Stationary Gas Turbines ~~Engines~~ (Oxides of Nitrogen) - Adopted 8/16/93, Amended 1/11/18

I. Purpose

The purpose of this Rule is to limit oxides of nitrogen (NOx) emissions from stationary gas turbines.~~require retrofit of oxides of nitrogen (NOx) Best Available Control Technology (BACT) to cogeneration gas turbine engines subject to California Health & Safety Code Section 40918 (b) and compliance with Reasonably Available Control Technology (RACT) NOx limits for cogeneration gas turbine engines subject to 1990 Federal Clean Air Act Section 182(f).~~

II. Applicability

The provisions of this Rule shall apply to any ~~cogeneration~~stationary gas turbine ~~engine~~ with a rating equal to or greater than ~~10.0~~0.88 megawatts (MW) operating in the Eastern Kern Air Pollution Control District (District).

III. Definitions

~~D. Cogeneration Gas Turbine Engine - an internal combustion gas or liquid-fueled device consisting of compressor, combustor, and power turbine used to power an electrical generator and generate steam (or useful heat).~~

A. Combined Cycle: Any stationary gas turbine operated both for the production of electrical energy from shaft work and the useful energy produced from heat recovered from its exhaust gases.

~~A.~~B. Dry Low-NOx Combustor: ~~-~~ A~~a~~ny gas turbine engine combustor using staging, air/fuel premixing or other design features to reduce NOx emissions.

~~E. Engine and/or emissions control system operating parameters - key indicators of gas turbine engine and/or emissions control system performance, including ammonia injection rate and catalyst bed temperature for SCR; water (or steam) injection rate; or operating conditions of a dry low-NOx combustor.~~

~~B.~~C. Gaseous Fuel: ~~Fired - using gaseous fuel as normal (not standby) fuel~~Any fuel existing as gas at standard conditions.

~~F. HHV - higher heating value of fuel.~~

~~G. F. LHV - lower heating value of fuel.~~

~~C.~~D. Liquid Fuel: Any fuel, including distillate and residual oil, existing as liquid at standard conditions.

~~D.~~E. Oxides of Nitrogen (NOx): ~~Emissions Concentration -~~ Total ~~oxides of~~ nitrogen oxides (expressed as NO_2). ~~concentration calculated using the equation in Section VI (or an EPA-approved correlation).~~

F. Power Augmentation: An increase in the gas turbine shaft output and/or the decrease in gas turbine fuel consumption by the addition of energy recovered from exhaust heat.

~~H. Oil-Fired - using liquid fuel as normal (not standby) fuel.~~

~~E.~~G. Rating: ~~-~~ M~~m~~anufacturer's continuous electrical output megawatt (MW) specification for a gas turbine~~-powered cogeneration~~ system.

H. Simple Cycle: Any stationary gas turbine in which all electric generators are driven by shaft work from fuel combustion.

I. Selective Catalytic Reduction (SCR): ~~- Exhaust gas NOx control system utilizing ammonia and a reducing catalyst to convert NOx to nitrogen and oxygen.~~A post-combustion control technology that utilizes a reducing agent, such as ammonia, injected into the exhaust gas stream where it converts NOx to molecular nitrogen in the presence of a catalyst.

J. Stationary Gas Turbine: Any gas turbine system, with or without power augmentation, which is permanently attached to a foundation, or is not a portable gas turbine. The gas turbine is not self-propelled nor intended to be propelled while performing its function, although it may be mounted onto a foundation. Two or more gas turbines powering a common shaft shall be treated as one gas turbine.

~~A.~~K. Standard Conditions: As defined in Rule 102, Subsection RR.

~~B.~~L. Shut-Down Period: The time necessary to cease operation of a gas turbine from operating under load conditions. The time shall not exceed one (1) hour.

~~K. Thermal Stabilization Period - start up time necessary to bring a cogeneration system heat recovery device up to design temperature, not exceeding two hours.~~

M. Start-Up Period: The time necessary to bring operation of a gas turbine up to the designed rating. The time shall not exceed six (6) hours for combined cycle gas turbine power plants or two (2) hours for simple cycle gas turbine power plants.

IV. Exemptions

The provision of this Rule shall not apply to the operation of stationary gas turbines under the following conditions:

A. Emergency standby units demonstrated to operate less than 200 hours per year.
B. Units less than 4 MW that operate less than 877 hours per year.
C. Laboratory units used in research and testing for the advancement of gas turbine technology.
~~A.~~D. Units operated exclusively for firefighting and/or flood control.

E. Turbines used in test cells and test stands.

~~I.~~F. Portable equipment registered in accordance with ARB regulations under 13 CCR 2450-2465, Portable Equipment Registration Program (PERP) or 13 CCR 2420 Off-road Compression-ignition Engines and Equipment. Portable turbines used by the Department of Defense or National Guard exclusively used for military tactical support or other federal emergency purposes.

~~XII.~~ **V. Requirements**

A. Emission Limits

The owner or operator of any stationary gas turbine unit shall not operate such unit under load conditions, excluding the start-up or shut-down period which results in the measured NOx emissions concentration exceeding the compliance limit listed below, averaged over one (1) hour based on four consecutive 15-minute averages:~~NOx emissions concentration (ppmv) from any cogeneration gas turbine engine subject to this Rule shall not exceed the following limit while operating under load and after the thermal stabilization period:~~

~~E. Gas turbine using SCR for NOx control:~~

	~~Gas-Fired~~	~~Oil-Fired~~
~~RACT limit until January 1, 1997:~~	~~10~~	~~40~~
~~BACT limit on and after January 1, 1997:~~	~~$9 \times \frac{EFF}{25}$~~	~~$25 \times \frac{EFF}{25}$~~

~~F. Westinghouse 251B10 gas turbine with Authority to Construct issued before 1/1/83 using dry low-NOx combustor(s) to meet January 1, 1997 limit:~~

	~~Gas-Fired~~	~~Oil-Fired~~
~~RACT limit until January 1, 1997:~~	~~96~~	~~114~~
~~BACT limit on and after January 1, 1997:~~	~~$20 \times \frac{EFF}{25}$~~	~~$42 \times \frac{EFF}{25}$~~

~~Percent EFF (efficiency) shall be the higher of EFF_1 or EFF_2 below. An EFF less than 25 shall be assigned a value of 25.~~

~~EFF_1 = 3,412 Btu/kw-hr x 100% / Actual Heat Rate at HHV, Btu/kw-hr~~

~~EFF_1 is the demonstrated percent thermal efficiency of the gas turbine engine only, calculated from the actual heat input (using HHV) without consideration of any downstream energy recovery; calculated at ISO conditions; and measured at peak load.~~

~~$EFF_2 = EFF_{mfr}$ x LHV/HHV~~

~~Where EFF_{mfr} is the manufacturer's continuous rated percent thermal efficiency of the gas turbine engine with air pollution control equipment in operation and using fuel LHV. EFF_2 is EFF_{mfr} after correction from LHV to HHV at peak load.~~

Unit Size Megawatt Rating (MW)	Compliance Limit NOx, ppmv at 15% O_2	
	Gaseous Fuel	Liquid Fuel
Units Rated 0.88 to Less Than 2.9 MW OR Units Greater Than or Equal to 4 MW That Operate Less Than 877 Hour/Year	42	65
2.9 MW to Less Than 10 MW	25	65
10.0 MW and Greater	9	25

B. The owner or operator of Westinghouse W251B10 with Authority to Construct issued before January 1, 1983 using dry low-NOx combustors shall have the following NOx emission limits:

1. 25 ppmv at 15% O_2 when fired with gaseous fuel or,

2. 65 ppmv at 15% O_2 when fired with liquid fuel.

C. Start-up/Shut-down Combined Cycle Units

The NOx emissions shall meet at least one of the following averaged over the duration of the start-up or shut-down period:

1. 70 ppmv at 15% O_2 for turbines fired with gaseous fuel or,

2. 226 ppmv at 15% O_2 for turbines fired with liquid fuel.

D. Start-up/Shut-down Simple Cycle Units

The NOx emission shall be kept to a minimum by use of the following:

1. Manufacturer’s recommendation for operation during start-up and shut-down.

2. Injection of water as soon as reasonably possible.

3. Maintaining proper air to fuel ratios.

~~XIII.~~ VI. Administrative Requirements

A. Emission Control Plan

The owner or operator of any existing ~~cogeneration~~stationary gas turbine ~~engine~~ subject to this Rule shall submit to the APCO for approval an emissions control plan, including

a schedule of increments of progress to be taken to meet or exceed requirements of Section ~~I~~V to comply with the compliance schedule prescribed by Section VIII.

An emissions control plan shall be submitted for each ~~cogeneration~~stationary gas turbine ~~engine~~ subject to this Rule, including:

1. ~~KCAPCD~~District ~~P~~permit number,
2. Gas turbine manufacturer's name and model number,
~~3. Gas turbine model number,~~
~~4.~~3. Rated electrical energy output (MW) and rated heat recovery (Btu/hr),
~~5.~~4. Type of fuel (gas~~,~~ and/or liquid),
~~6. HHV for each fuel,~~
~~6.~~5. Last year's fuel consumption (cubic feet of gas or gallons of liquid ~~per hour~~),
~~7.~~6. Last year's hours of operation,
~~8. Heat rate (Btu/kw-hr) calculated using HHV for each type of fuel,~~
~~8.~~7. Type of emissions control to be applied to engine, and
~~9.~~8. Documentation showing current NOx emissions concentration.

B. Monitoring and Recordkeeping

The owner or operator of any ~~cogeneration~~stationary gas turbine ~~engine~~ subject to the provisions of this rule shall perform the following actions:

1. Install, operate, and maintain in calibration~~,~~ equipment ~~approved by the Control Officer,~~ capable of continuously measuring and recording the following:

   a. ~~Engine and/or emissions control system operating parameters as correlated to NOx emissions~~Control system operating parameters:~~,~~
   ~~b. Elapsed time of operation,~~
   ~~c. NOx emissions concentration. The NOx monitoring system shall meet EPA requirements as specified in 40 CFR Part 60, App. B, Spec. 2, or other systems approved by EPA. The owner or operator shall submit to the Control Officer information demonstrating the emission monitoring system has data gathering and retrieval capability. When this system is not operational, data gathered for Subsection a., above, shall be used to establish NOx emissions concentration. Continuous NOx monitoring for gas turbines not using SCR shall not be required until January 1, 1997.~~
      i. Periodic NOx emission concentrations,
      ii. Turbine exhaust oxygen concentration,
      iii. Air-to-fuel ratio,
      iv. Flow rate of reducing agents added to turbine exhaust,
      v. Catalyst inlet and exhaust temperature,
      vi. Catalyst inlet and exhaust oxygen concentration,
      vii. Other operational characteristics.

   b. Elapsed time of operation measured by an hourly meter.

2. For units with 10 MW or greater, the owner or operator shall monitor the exhaust gas NOx concentrations. The NOx monitoring system shall meet EPA

requirements as specified in 40 CFR Part 60, Appendix B, Specification 2, or other systems approved by EPA. The owner or operator shall submit to the Air Pollution Control Officer the information demonstrating that emission monitoring system has data gathering and retrieval capability.

3. Submit to the Air Pollution Control Officer, prior to issuance of Permit to Operate, information correlating the control system operating parameters to the associated NOx output. This information may be used by the Air Pollution Control Officer to determine compliance when there is no continuous emission monitoring system for NOx available or when the continuous emission monitoring system is not operating properly.

4. Provide source test information regarding the exhaust gas NOx concentration at ISO conditions corrected to 15 percent oxygen on a dry basis.

~~3.~~5. Maintain a stationary~~cogeneration~~ gas turbine engine operating log, including, on a daily basis, actual start-up and stop times, total hours of operation, and type and quantity of fuel used (liquid/gas).

~~4.~~6. Maintain and make all records available for District inspection at any time ~~all records~~ for a period of ~~two years~~ five (5) years.

C. Compliance Testing

The owner or operator of any stationary~~cogeneration~~ gas turbine ~~engine~~ subject to provisions of this rule shall conduct annual testing using the methods specified in Section VI.D below.~~showing NOx emissions concentration as defined in Subsection III.G, and demonstrated percent efficiency (EFF) of the gas turbine engine.~~

D. ~~Compliance~~ Test Methods

1. Oxides of nitrogen (NOx) emissions shall be determined using EPA Method 7E or EPA Method 20 or ARB Method 100.

2. Exhaust gas ~~o~~Oxygen (O_2) concentration content shall be determined using EPA Method 3A or ARB Method 100.

~~3. HHV and LHV of liquid fuels shall be determined using:~~

~~c. ASTM D240-87, Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter, or~~

~~d. ASTM D2382-88, Standard Test Method for Heat of Combustion of Hydrocarbon Fuels by Bomb Calorimeter (High-precision Method).~~

~~4. HHV and LHV of gaseous fuels shall be determined using:~~
~~a. ASTM D3588-91, Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density (Specific Gravity) of Gaseous Fuels, or~~

~~d. ASTM 1826-88, Standard Test Method for Calorific (Heating) Value of Gases in Natural Gas Range by Continuous Recording Calorimeter, or~~

~~C. ASTM 1945-81, Standard Method for Analysis of Natural Gas by Gas Chromatography.~~

~~5. Percent efficiency of the gas turbine engine shall be determined using actual field measurements for gas turbine fuel consumption and power output.~~

E. Exempt Units

Exempt units shall comply with the following:

1. The owner or operator of any unit exempt under Section IV shall submit support documentation to the Air Pollution Control Officer within seven days if the hour-per-year limit is exceeded. If the hour-per-year limit is exceeded, the exemption shall be permanently withdrawn. Within 30 days after the exceedance, the owner or operator shall submit an application for Authority to Construct that details a plan to meet the applicable limits specified in Section V of this Rule. Included in the application, the owner or operator shall submit a schedule of increments of progress for the installation of the required control equipment. This schedule shall not exceed four years from the date of the receipt of Authority to Construct application.

2. A public service unit operating during a state of emergency, when such emergency is declared by proclamation of the Governor of the State of California and when the unit is located in the specific geographical location identified in the proclamation, shall be excluded from the hour-per-year limit.

~~XIV.~~ VII. Calculations

NOx emissions concentrations shall be calculated using the following equation:

$$NOx = (NOx_{obs})\ (P_{ref}/P_{obs})^{0.5}(288\ K/T_{amb})^{1.53}(e^{19(Hobs-0.00633)})$$

where:

NOx	=	NOx emissions concentration (ppmv) corrected to 15 percent oxygen and ISO standard conditions on a dry basis.
NOx_{obs}	=	Measured stack gas NOx emissions concentration (ppmv) corrected to 15 percent oxygen on a dry basis.
P_{ref}	=	standard atmospheric pressure (14.7 psia).
Pobs	=	atmospheric pressure measured at site during testing, psia.
H_{obs}	=	absolute ambient humidity measured at site during testing, pounds water per pound dry air.

e = transcendental constant (2.718).

T_{amb} = ambient air temperature in K and measured at site during testing.

~~XV.~~ VIII. Compliance Schedule ~~for Section IV BACT Limits~~

An owner or operator of a ~~cogeneration~~ stationary gas turbine ~~engine~~ subject to Section ~~I~~V ~~BACT limits~~ and not currently achieving such limits shall comply with requirements of Section ~~I~~V in accordance with the following schedule:

A. By (18 months after rule adoption date), submit to the Control Officer a compliance plan, and a complete application for Authority to Construct for all necessary equipment modifications subject to Rule 201.

B. By January 1, 2021~~1997~~, demonstrate full compliance.

APPENDIX C:

AMENDED RULE 425

STATIONARY GAS TURBINES (OXIDES OF NITROGEN)

RESPONSE TO COMMENTS

On November 2, 2017, the District held a public rule development workshop at the Mojave Veteran's Building in Mojave, California to present proposed revisions of Rule 425, Stationary Gas Turbines. The District submitted copies of the proposed revision to the ARB and EPA in October, 2017 for an initial 30-day review. The District did not receive any comments and suggestions from ARB and EPA.

Industry representative from November 2, 2017 asked various questions regarding the proposed amendments and submitted written comments within 30-days following the workshop. Appendix C addresses comments and suggested changes regarding amended Rule 425 from industry/public.

INDUSTRY/PUBLIC COMMENTS

The following comments were made by Edwards Air Force Base (EAFB) representatives in response to the proposed revision presented at the November 2, 2017 workshop. EAFB submitted the following written comments regarding Rule 425 on December 4, 2017.

1. EAFB commented: Change Section II (Applicability) to 0.88 megawatts (MW) to reconcile the difference between permit exemptions in Rule 202 and amended Rule 425.

   District agreed with the comment and corrected this issue.

2. EAFB commented: Since the District changed the definition of gas turbine from cogeneration gas turbines to stationary gas turbines, EAFB recommended adding turbines used in test cells and test stands that are being tested for the aerospace industry. Additionally, EAFB recommended adding an exemption for portable turbines to clarify applicability.

   District agreed with the comments and added the exemptions to Section IV (Exemptions).

3. EAFB commented: Add additional definition of "stationary gas turbine" to clarify the difference between stationary and portable turbines.

   District added EAFB's recommended language to the definition of "stationary gas turbine."

4. EAFB commented: Add ARB test method 100 to Section VI.D (Test Methods) for oxides of nitrogen (NOx) emission.

   District added ARB Method 100 to Section VI.D (Test Methods) for oxides of nitrogen (NOx) emission.

RECEIVED WITH FEE
RECEIPT # 15136386

NOTICE OF EXEMPTION
From California Environmental Quality Act

TO: County Clerk
County of Kern
1115 Truxtun Avenue
Bakersfield, CA 93301

FROM: Eastern Kern Air Pollution Control District
2700 "M" Street, Suite 302
Bakersfield, CA 93301

FILED
KERN COUNTY
JAN 18 2018
MARY B. BEDARD
AUDITOR CONTROLLER-COUNTY CLERK
BY _____ DEPUTY

Name of Person or Agency Carrying Out Project
Eastern Kern Air Pollution Control District (EKAPCD)

Project Title
Rule 425, Stationary Gas Turbines (Oxides of Nitrogen)

Project Location - Specific
Portion of Kern County within the Mojave Desert Air Basin

Project Location - City

Project Location - County
Eastern Kern County

Description of Nature, Purpose, and Beneficiaries of Project
Objective: Amended Rule 425, Stationary Gas Turbines (Oxides of Nitrogen) will lower current NOx limits for stationary gas turbines with rated heat input of 10.0 megawatts (MW) or greater fired with gaseous or liquid fuels, and include NOx limits for units rated from 0.88 MW to 10.0 MW.

Name of Public Agency Approving Project	Permit (ATC) Numbers	Issue Date
Eastern Kern Air Pollution Control District (EKAPCD)	N/A	January 11, 2018

Exempt Status: (Check One)

_____ Ministerial (Section 15268)
_____ Declared Emergency (Section 15269(a))
_____ Emergency Project (Section 15269 (b) or (c))
__√__ Categorical Exemption (Sections 15308 & 15354): Application by public Agency (Section 15300.4)
__√__ Project Expected to have Insignificant Impact (Section 15061(b) (3)

Reason(s) Why Project is Exempt
Actions taken by the regulatory agency (EKAPCD) are categorically exempt from CEQA to assure the protection of the environment. Categorical exemptions from CEQA are allowed for projects that will not have a significant adverse effect to the environment.

Contact Person	Area Code	Telephone No.
Jeremiah Cravens	(661)	862-5250

If Filed by Applicant:

1. **Attach certified document of exemption finding**
2. **Has a Notice of Exemption been filed by the public agency approving the project? ___ Yes ___ No n/a**

Date Received for Filing

Notice of Environmental Document
Posted by County Clerk on 1/18/18
and for 30 days thereafter, Pursuant to
Section 21152(C), Public Resources Code

State of California – Department of Fish and Wildlife

2018 ENVIRONMENTAL FILING FEE CASH RECEIPT

DFW 753.5a (Rev. 01/02/18) Previously DFG 753.5a

RECEIPT NUMBER:
15 — 01182018 — 15136386

STATE CLEARINGHOUSE NUMBER *(if applicable)*

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY.

LEAD AGENCY	LEAD AGENCY EMAIL	DATE
EASTERN KERN AIR POLLUTION CONTROL DISTRICT		1/18/2018

COUNTY/STATE AGENCY OF FILING	DOCUMENT NUMBER
Kern	9674

PROJECT TITLE

RULE 425, COGENERATION GAS TURBINE ENGINES (OXIDES OF NITROGEN)

PROJECT APPLICANT NAME	PROJECT APPLICANT EMAIL	PHONE NUMBER
EASTERN KERN AIR POLLUTION CONTROL DISTRICT		(661) 862-5250

PROJECT APPLICANT ADDRESS	CITY	STATE	ZIP CODE
2700 M STREET, SUITE 302	BAKERSFIELD	CA	93301

PROJECT APPLICANT *(check appropriate box)*

☐ Local Public Agency ☐ School District ☒ Other Special District ☐ State Agency ☐ Private Entity

CHECK APPLICABLE FEES:

☐ Environmental Impact Report (EIR)	$3,168.00	$	
☐ Mitigated/Negative Declaration (MND)(ND)	$2,280.75	$	0.00
☐ Certified Regulatory Program document (CRP)	$1,077.00	$	0.00
☐ Exempt from fee			
☒ Notice of Exemption (attach)			
☐ CDFW No Effect Determination (attach)			
☐ Fee previously paid (attach previously issued cash receipt copy)			
☐ Water Right Application or Petition Fee (State Water Resources Control Board only)	$850.00	$	
☒ County documentary handling fee		$	50.00
☐ Other _____		$	

PAYMENT METHOD:

☐ Cash ☐ Credit ☐ Check ☒ Other **TOTAL RECEIVED** $ 50.00

SIGNATURE	AGENCY OF FILING PRINTED NAME AND TITLE
X	KERN COUNTY CLERK, J. GARCIA, OST

ORIGINAL - PROJECT APPLICANT COPY - CDFW/ASB COPY - LEAD AGENCY COPY - COUNTY CLERK DFW 753.5a (Rev. 20151215)

RULE 102 **Definitions** - Adopted 4/18/72, Amended 1972-75, 8/31/76, 3/7/96, 7/1/99, 3/11/2010, 1/13/2011

Except as otherwise specifically provided in these Rules and except where the context otherwise indicates, words used in these Rules are used in exactly the same sense as the same words are used in Division 26, of the California Health and Safety Code.

A. Affected Pollutants: Any air contaminant and precursor to such contaminant regulated under the Clean Air Act which include: volatile organic compounds, nitrogen oxides, sulfur oxides, Particles with aerodynamic diameter of 10 micrometers or less (PM_{10}), carbon monoxide, ethylene, lead, asbestos, beryllium, mercury, vinyl chloride, fluorides, sulfuric acid mist, hydrogen sulfide, total reduced sulfur, and reduced sulfur compounds, and those pollutants which the U.S. Environmental Protection Agency (EPA), California Air Resources Board (ARB), or District, after due process, has determined to have a significant adverse effect on the environment, public health, or public welfare excluding GHGs as defined in this rule.

B. Agricultural Facility: Any operation occurring on a ranch or farm directly related to the growing of crops or raising animals on that ranch or farm, for the primary purpose of making a profit or for livelihood.

C. Air Contaminants: Any discharge, release or other propagation into the atmosphere directly or indirectly, caused by man and including, but not limited to, smoke, charred paper, dust, soot, grime, carbon, noxious acids, fumes, gases, odors, or particulate matter, or any combination thereof, excluding GHGs as defined in this rule.

D. Alteration: Any addition to, enlargement of, replacement of, or any modification or change of the design, capacity, process, or arrangement, or any increase in the connected loading of, equipment or control apparatus, which may affect the type or amount of air contaminants emitted.

E. Ambient Air Quality Standards: State and National Ambient Air Quality Standards. (For inclusion of this Rule in the State Implementation Plan, all references to ambient air quality standards shall be implemented as National Ambient Air Quality Standards.)

F. Atmosphere: The air that envelops or surrounds the earth. Air pollutants emitted into a building, not designed specifically as a piece of air pollution control equipment, shall be considered an emission into the atmosphere.

G. Board: The Air Pollution Control Board of the Eastern Kern Air Pollution Control District.

H. Carbon Dioxide Equivalent, CO_2 Equivalent, or CO_2e: A measure for comparing carbon dioxide with other GHGs, based on the quantity of those gases multiplied by the appropriate global warming potential (GWP) factor as stated in 40 CFR Part 98 Subpart A Table A-1 (Global Warming Potentials).

I. Confined Animal Facility (CAF): Facility where animals are corralled, penned, or otherwise caused to remain in restricted areas for commercial purposes and primarily fed by means other than grazing.

J. Combustible Refuse: Any solid or liquid combustible waste material containing carbon in a free or combined state.

K. Combustion Contaminants: Particulate matter discharged into the atmosphere from the burning of any kind of material containing carbon in a free or combined state.

L. Control Officer: The Air Pollution Control Officer of the Eastern Kern Air Pollution Control District.

M. District: The Eastern Kern Air Pollution Control District.

N. Dusts: Minute, solid particles released into the air by natural forces or by mechanical processes such as crushing, grinding, milling, drilling, demolishing, shoveling, conveying, covering, bagging, sweeping, or other similar processes.

O. Eastern Kern County Air Pollution Control District: That portion of Kern County which lies east of the line described as follows:

- Beginning at the Kern-Los Angeles County boundary and running north and east along the northwest boundary of the Rancho La Liebre Land Grant to the point of intersection with the township line common to T.9.N and T.10.N, San Bernardino Base and Meridian (SBB&M);
- then west along the township line to the range line common to T.10.N, R.16.W and T.9.N, R.17.W, SBB&M;
- then north along the range line common to R.16.W and R.17.W to the point of intersection with the Rancho El Tejon Land Grant boundary;
- then southeast, northeast, and northwest along the boundary of the Rancho El Tejon Land Grant to the northwest corner of S.3, T.11.N, R.17.W, SBB&M;
- then west 1.2 miles;
- then north to the Rancho El Tejon Land Grant boundary;
- then northwest along the Rancho El Tejon line to the southeast corner of S.34, T.32.S, R.30.E, Mount Diablo Base and Meridian (MDB&M);
- then north to the northwest corner of S.35, T.31.S, R.30.E, MDB&M;
- then northeast along the boundary of the Rancho El Tejon Land Grant to the southwest corner of S.18, T.31.S, R.31.E, MDB&M;
- then east to the southeast corner of S.13, T.31.S, R.31.E, MDB&M;
- then north along the range line common to R.31.E, and R.32.E, to the northwest corner of S.6, T.29.S, R.32.E, MDB&M;
- then east to the southwest corner of S.31, T.28.S, R.32.E, MDB&M;
- then north along the range line common to R.31.E and R.32.E, the northwest corner of S.6, T.28.S, R.32.E, MDB&M;
- then west to the southeast corner of S.36, T.27.S, R.31.E, MDB&M;
- then north along the range line common to R.31.E, and R.32.E,to the Kern - Tulare County boundary.

P. Emission: The act of passing into the atmosphere an air contaminant or gas stream which contains an air contaminant, or the air contaminant so passed into the atmosphere.

Q. Emission Point: The place at which an emission enters the atmosphere.

R. Exempt Compounds:

1. The following compounds are excluded from the definition of Volatile Organic Compounds (VOC) because they have been determined to have negligible photochemical reactivity:

Acetone,
Methane,
Carbon monoxide,
Carbon dioxide,
Carbonic acid,
Ethane,
Metallic carbides or carbonates,
Ammonium carbonates,
Methylene chloride (dichloromethane),
1,1,1-trichloroethane (Methyl chloroform),
1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113),
trichlorofluoromethane (CFC-11),
1,2-dichloro 1,1.2,2-tetrafluoroethane (CFC-114),
chloropentafluoroethane (CFC-115),
dichlorodifluoromethane (HCFC-12),
1,1,1-trifluoro 2,2-dichloroethane (HCFC-123),
2-chloro 1,1,1,2-tetrafluoroethane (HCFC-124),
1,1-dichloro 1-fluoroethane (HCFC-141b),
1-chloro 1,1-difluoroethane (HCFC-142b),
chlorodifluoromethane (HCFC-22),
trifluoromethane (HFC-23),
pentafluoroethane (HFC-125),
1,1,2,2-tetrafluoroethane (HFC-134),
1,1,1,2-tetrafluoroethane (HFC-134a),
1,1,1-trifluoroethane (HFC-143a),
1,1-difluoroethane (HFC-152a),
parachlorobenzotrifluoride (PCBTF),
Cyclic, branched, or linear completely methylated siloxanes (VMS)
perchloroethylene (tetrachloroethylene);
3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)
1,3-dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)
1,1,1,2,3,4,4,5,5,5-decafluoropentane (HFC 43-10mee)
Difluoromethane (HFC-32)
Ethylfluoride (HFC-161)
1,1,1,3,3,3-hexafluoropropane (HFC-236fa)
1,1,2,2,3-pentafluoropropane (HFC-245ca)
1,1,2,3,3-pentafluoropropane (HFC-245ea)
1,1,1,2,3-pentafluoropropane (HFC-245eb)
1,1,1,3,3-pentafluoropropane (HFC-245fa)
1,1,1,2,3,3-hexafluoropropane (HFC-236ea)
1,1,1,3,3-pentafluorobutane (HFC-365mfc)

Chlorofluoromethane (HCFC-31)
1-chloro-1-fluoroethane (HCFC-151a)
1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a)
1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-butane (C4F9OCH3 or HFE-7100)
2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoropropane ((CF3)2CFCF2OCH3)
1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane (C4F9OC2H5 or HFE-7200)
2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane ((CF3)2CFCF2OC2H5)
Methyl Acetate
1,1,1,2,2,3,3-heptafluoro-3-methoxy-propane (n-C3F7OCH3 or HFE-7000)
3-ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl) hexane (HFE-7500)
1,1,1,2,3,3,3-heptafluoropropane (HFC 227ea)
Methyl Formate (HCOOCH3)
1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-trifluoromethyl-pentane (HFE-7300)
Dimethyl Carbonate
Propylene Carbonate

Perfluorocarbon compounds which fall into these classes:

i. Cyclic, branched, or linear, completely fluorinated alkanes,
ii. Cyclic, branched, or linear, completely fluorinated ethers with no unsaturations,
iii. Cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations, and
iv. Sulfur containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine

Perfluorocarbon and methylated siloxane compounds shall be assumed to be absent from a product or process unless a manufacturer or facility operator identifies the specific individual compounds (from the broad classes of perfluorocarbon and methylated siloxane compounds) and the amounts present in the product or process and identifies a validated test method which can be used to quantify the specific compounds.

2. For purposes of determining compliance with emissions limits, VOC will be measured by the test methods in the approved State implementation plan (SIP) or 40 CFR Part 60, Appendix A, as applicable. Where such a method also measures compounds with negligible photochemical reactivity, these negligibly-reactive compounds may be excluded as VOC if the amount of such compounds is accurately quantified, and such exclusion is approved by the enforcement authority.

3. The following compound is a VOC for purposes of all recordkeeping, emissions reporting, photochemical dispersion modeling and inventory requirements which apply to VOC and shall be uniquely identified in emission reports, but is not a VOC for purposes of VOC emissions limitations or VOC content requirements: Tertiary Butyl Acetate (t-butyl acetate) informally known as TBAC or TBAc.

S. Flue: Any duct or passage for air, gases, or the like, such as a stack or chimney.

T. Fugitive Dust: Any solid particulate matter that becomes airborne, other than that emitted from an exhaust stack, directly or indirectly as a result of human activities.

U. Fumes: Minute, solid particles generated by condensation of vapors from solid matter after volatilization from a molten state, or generated by sublimation, distillation, calcination, or chemical reaction, when these processes create air-borne particles.

V. Gasoline: Any organic liquid, including petroleum distillates and alcohols with a true vapor pressure greater than 1.5 psia, which is commonly or commercially known or sold as gasoline.

W. Greenhouse Gas, Greenhouse Gases, or GHG(s): Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O), Sulfur Hexafluoride (SF_6), Hydrofluorocarbons (HFCs), and Perfluorocarbons (PFCs).

X. Global Warming Potential or GWP: The capacity to heat the atmosphere, calculated as the ratio of the time-integrated radiative forcing from the instantaneous release of 1 kilogram (kg) of a substance relative to that of 1 kg of CO_2. GWP shall be calculated according to the factors for a 100-year time horizon, as stated in 40 CFR Part 98 Subpart A Table A-1 (Global Warming Potentials).

Y. Hearing Board: The Hearing Board of the Eastern Kern Air Pollution Control District.

Z. Installation: Placement, assemblage or construction of equipment or control apparatus at the premises where the equipment or control apparatus will be used, including all preparatory work at such premises.

AA. Institutional Facility: Any hospital, boarding home, school, corporation yard, or like facility.

BB. Kern County Air Pollution Control District: As of May 13, 2010 any District Rule that is applicable or makes reference to Kern County Air Pollution Control District (KCAPCD) shall mean Eastern Kern Air Pollution Control District (EKAPCD).

CC. Loading Rack: Any aggregate or combination of organic liquid loading equipment from the connection at the inlet of the organic liquid pump to and including the hose and connector at the portable delivery tank.

DD. Motor Vehicle: A motor vehicle is a “vehicle” (defined in this rule) that is self-propelled; and does not include self-propelled wheelchairs, motorized tricycles, or motorized quadricycles, if operated by a person who, by reason of physical disability, is otherwise unable to move about as a pedestrian.

EE. Multiple-Chamber Incinerator: Any article, machine, equipment, contrivance, structure or any part of a structure used to dispose of combustible refuse by burning, consisting of three or more refractory-lined combustion furnaces in series, physically separated by refractory walls, interconnected by gas passage ports or ducts, and employing adequate design parameters necessary for maximum combustion of the material to be burned. Refractories shall have a Pyrometric Cone equivalent of at least 17, tested according to the American Society for Testing Materials, Method C-24.

FF. Open Outdoor Fire: Combustion of any combustible refuse or other material of any type outdoors in the open air, and not in any enclosure where the products of combustion are not directed through a flue.

GG. Operation: Any physical action resulting in a change in the location, form, or physical properties of a material, or any chemical action resulting in a change in the chemical composition or the chemical or physical properties of a material.

HH. Owner: Including but is not limited to, any person who leases, supervises or operates equipment, in addition to the normal meaning of ownership.

II. Particulate Matter: Any material, except uncombined water, which exists in a finely-divided form as a liquid or solid at standard conditions.

JJ. Person: Any person, firm, association, organization, partnership, business trust, corporation, company, contractor, supplier, installer, user or owner, or any state or local governmental agency or public district or any officer or employee thereof.

KK. PPM: Parts per million by volume expressed on a gas basis.

LL. Process Weight Per Hour: The total weight of all materials introduced into any specific source operation, which operation may cause any emission into the atmosphere. Solid fuels charged shall be considered as part of the process weight, but liquid and gaseous fuels and combustion air will not. "The Process Weight Per Hour" will be derived by dividing the total process weight by the number of hours in one cycle of operation from the beginning of any given process to the completion thereof, excluding any time during which the equipment is idle.

MM. Regulation: One of the major subdivisions of the Rules of the Eastern Kern Air Pollution Control District.

NN. Residential Rubbish: Refuse originating from residential uses including wood, paper, cloth, cardboard, tree trimmings, leaves, lawn clippings, and dry plants.

OO. Rule: A rule of the Eastern Kern Air Pollution Control District.

PP. Section: A section of the California Health and Safety Code, unless some other statute is specifically mentioned.

QQ. Source Operation: The last operation preceding the emission of an air contaminant, which operation: a) results in the separation of the air contaminant from the process materials or in the conversion of the process materials into air contaminants, as in the case of combustion of fuels; and b) is not an air pollution abatement operation.

RR. Standard Conditions: A gas temperature of 68° Fahrenheit (20° Celsius) and an absolute pressure of 14.7 pounds per square inch (760-millimeters of mercury). Results of all analyses and tests shall be calculated or reported at this gas temperature and pressure.

SS. Toxic Air Contaminant (TAC): Any air pollutant which may cause or contribute to an increase in mortality or in serious illness, or may pose a present or potential hazard to human health. Any substance listed as a hazardous air pollutant pursuant to subsection (b) of Section 112 of the Clean Air Act (42 U.S.C. Sec. 7412(b)), any substance on the candidate list of potential toxic air contaminants or list of designated toxic air contaminants prepared by the California Air Resources Board pursuant to Article 3 (commencing with Section 39660) of Chapter 3.5 of Part 2, including, but not limited to, all substances currently under review and scheduled or nominated for review, and any hazardous air pollutant identified and listed for which health effects information is limited.

TT. Vehicle: A vehicle is a device by which any person or property may be propelled, moved, or drawn upon a highway, excepting a device moved exclusively by human power.

UU. Volatile Organic Compounds (VOC): Any compound containing at least one atom of carbon except for exempt compounds as defined in this rule.

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RULE 201 **Permits Required** - Adopted 4/18/72, Amended 3/19/74, 6/29/81, 4/25/83, 5/2/96

I. **Authority to Construct** - Any person building, altering or replacing any equipment, the use of which may cause the issuance of air contaminants or the use of which may eliminate or reduce or control the issuance of air contaminants, shall first obtain authorization for such construction from the Control Officer. An Authority to Construct shall remain in effect until the Permit to Operate the equipment for which the application was filed is granted, denied, or canceled.

II. **Permit to Operate** - Before any new or modified equipment described in Subsection I. or any existing equipment so described may be operated, a written permit shall be obtained from the Control Officer. No Permit to Operate shall be granted either by the Control Officer or the Hearing Board for any equipment described in Subsection I., constructed or installed without authorization as required by Subsection I., until the information required is presented to the Control Officer and such equipment is altered, if necessary, and made to conform to standards set forth in Rule 208 (Standards for Granting Application) and elsewhere in these Rules and Regulations.

A. New Equipment - A person shall notify the Control Officer before operating or using equipment granted an Authority to Construct. Upon such notification, the Authority to Construct shall serve as a temporary Permit to Operate for the equipment until the Permit to Operate is granted or denied. The equipment shall not be operated contrary to conditions specified in the Authority to Construct and testing requirements shall be satisfied.

B. Modified Equipment - An Authority to Construct granted to modify equipment having a valid Permit to Operate shall serve as a temporary Permit to Operate for the equipment until a new Permit to Operate is granted or denied. The modified equipment shall not be operated contrary to the conditions specified in the Authority to Construct and a person shall notify the Control Officer when construction of the modification has been completed.

C. Existing Equipment - When an application for Permit to Operate is filed for existing equipment, the application shall serve as a temporary Permit to Operate for the equipment. If the equipment was previously operated under a Permit to Operate and has not been altered, it shall not be operated under a temporary Permit to Operate contrary to the conditions specified in the previous Permit to Operate.

III. **Posting of Permit to Operate** - A person who has been granted under Subsection II. a Permit to Operate any equipment described in Subsection II., shall firmly affix such Permit to Operate, an approved facsimile, or other approved identification bearing the permit number upon the article, machine, equipment, or other contrivance, in such a manner as to be clearly visible and accessible. In the event the equipment is so constructed or operated that the Permit to Operate cannot be so placed, the Permit to Operate shall be mounted so as to be clearly visible in an accessible place within 25 feet of the equipment or maintained readily available at all times on the operating premises.

VI. **Altering of Permit** - A person shall not willfully deface, alter, forge, counterfeit, or falsify a Permit to Operate any equipment.